CareManagement

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Gary S. Wolfe

Healthcare Trends to Prepare for in 2025

The year 2024 has come and gone, and now we are in the year 2025. Healthcare has evolved dramatically in recent years, with technology driving new opportunities, just as demographic and societal factors have created new challenges. What are the healthcare trends that will impact case management, and how will case management respond in 2025? We have a new US government administration, and change is not only on the horizon but is here! It will be busy, active, and probably expensive! Here are areas to monitor, watch, and participate in. The following items are not listed in order of importance.

What are the healthcare trends that will impact case management, and how will case management respond in 2025? We have a new US government administration, and change is not only on the horizon but is here!

- **Artificial Intelligence (AI).** This theory and development of computer systems that can perform tasks historically needing human intelligence has evolved from a buzzword to cutting edge technology across many industries, but particularly, healthcare. AI has been leveraged for predictive analytics, personalized treatment pathways, imaging, drug development, and learning. AI will drive operational success by enhancing efficiency, personalizing patient interactions, and generating actionable insights. AI will take patient data and create tailored wellness plans and communication strategies. AI is not a trend but a necessity. With AI there will be great challenges and gains but also great risks.
- **Technology in Mental Wellness.** We will see a generation of technological solutions revolutionize how mental healthcare services are delivered. We have seen some of this post-COVID, but we will witness many new technologies creating virtual healthcare sessions, all being delivered remotely. Chatbots will be developed to provide immediate 24/7 patient support. These innovations will help overcome challenges, including availability of resources and reducing the stigma sometimes associated with seeking mental health services.
- **Genomics.** This interdisciplinary field of molecular biology is the study of the structure, function, evolution, mapping, and editing of genomes of the DNA organism. It will present some of the most ethical challenges in healthcare innovation. Using recently developed models, we will see the continued development of targeted treatments for many genetic conditions, such as cystic fibrosis, Huntington's disease, and muscular dystrophy. We will see continued developments in cancer and cardiovascular disease, which are now being addressed on a molecular level.
- **Technological skills crisis.** This

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Catherine M. Mullahy

Families and Case Managers… a Winning Partnership

By Catherine M. Mullahy, RN, BS, CRRN, CCM, FCM

Families are often involved in patients'/clients' work, kids, and household responsibilities, and when a loved one is hospitalized or has multiple conditions that require coordination, multiple physician visits, and more … family involvement is not only a considerate and respectful matter, but often essential.

As I contemplated a topic for this column, I noted that in various social media posts by and for case managers, there has been an increase in discussions about the involvement of families in patient care. I thought back, and in fact, reviewed previous editions of the CMSA Standards of Practice to explore just when the inclusion of families was incorporated into those Standards, and it was in 2009:

> "Case Management is a collaborative process of assessment, planning, facilitation, care coordination, evaluation, and advocacy for options and services to meet an individual's and family's comprehensive health needs through communication and available resources to promote patient safety, quality of care, and cost-effective outcomes."

The Standards of Practice were revised a few times since then, most recently in 2022, and each time the inclusion of the family remained within the definition of case management. My thinking was that if family involvement was embedded in our Standards, then we should be paying closer attention or, at the very least, trying to. Family includes anyone who has a significant relationship with the patient/client, such as spouses, children, siblings, parents, grandparents, friends, or caregivers. This family involvement can take various forms such as providing information, expressing opinions, making decisions, sharing responsibilities, or offering support. I did notice with concern that several case managers consider involving families nothing more than a formality but without evidence of any meaningful collaboration; others seemed to consider involving families another time-consuming matter; and still others try to task families with the entire discharge planning process. Let's explore some basic information. It's accepted that communication is an essential component of the healthcare system, especially on behalf of patients who require long-term support, such as those with chronic illnesses, disabilities, or mental health conditions. Families, ideally, should be involved to ensure that their loved ones receive the best possible care. We need to recognize, however, that not all families have healthy and loving relationships with their loved ones, and others may not be able to form trusting relationships with "outsiders" … and yes, that would include case managers.

Why is communication so important between a case manager and a patient's family members? Families are often involved in patients'/clients' work, kids, and household responsibilities, and when a loved one is hospitalized or has multiple conditions that require coordination, multiple physician visits, and more … family involvement is not only a considerate and respectful matter, but often essential.

There are several factors that should be considered:

- **Awareness:** It helps to ensure that everyone is on the same page when it comes to the patient's/client's care plan. Patients might request to be discharged without consideration of their family member's ability to be involved. Family members might not be willing to assume greater responsibility than they already have, while the patient/client refuses care from a home care provider, and a discharge home without assistance is considered unsafe.
- **Peace of Mind:** Communication between a case manager and a patient's/client's family members can help alleviate stress and anxiety. Caring for a loved one who is ill or disabled can be challenging and overwhelming, especially when family members don't know what to expect or how

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Following Your Passion into Case Management and Disability Management

Patricia Nunez, MA, CRC, CDMS, CCM; Jared Young, PsyD, CAADC, LCSW, CCM; and Lisa Cook Bayer, JD, CCM, CDP

Professional case managers enter the field of case management through many avenues: nursing, social work, rehabilitation counseling, mental health counseling, as well as other disciplines. Today, Certified Case Managers (CCM) practice in multiple different settings across health and human services, "where medical care, mental health care, and social supports are delivered."

Disability management is an allied field with roots in insurance-based rehabilitation. Today, Certified Disability Management Specialists (CDMS) provide a "variety of services and solutions to help people with illnesses, injuries, and disabilities," including as they return to or stay at work.

At the recent 2024 Virtual Symposium held by the Commission for Case Manager Certification, three Commissioners described their unique pathways as they followed their passions into professional practice. Following is a brief reflection from each:

Patricia "Patty" Nunez, MA, CRC, CDMS, CCM

Chair of the Commission, (2024-2025)

When I was in graduate school in the early 1980s, private rehabilitation programs were gaining traction. This led to one of my first jobs in rehabilitation counseling, working in a hospital setting with individuals receiving inpatient and outpatient rehabilitation services and helping them pursue their goals. From there, an unexpected encounter expanded my professional journey into case management.

I was in Reno, Nevada, attending a national conference. While waiting in line for beverages, I started chatting with two people in line ahead of me. As it turned out, the woman worked for an insurance company as an assistant regional manager for case management. We had a great conversation, stayed in contact after the conference—and six weeks later, I was hired as a manager, overseeing a team of case managers at that insurance company. This led to a 33-year career in case management and vendor management.

Central to my professional development has been my passion for certification—not only attaining them (I am triple certified!), but also maintaining them. While in graduate school in 1982, I became a Certified Rehabilitation Counselor (CRC). Three years later, I became a Certified Insurance Rehabilitation Specialist (CIRS), which was the precursor of the CDMS credential. In the early 1990s, the CCM certification was developed. Being nationally certified, I was eligible to sit for the CCM examination.

Over the past three decades, I have viewed certifications as "guardrails" for professional and ethical practice—for myself, my team, and my organization. Being certified also commits me to continuous learning, which helps ensure that, as an advocate, I strive to provide the highest level of service to individuals in pursuit of their goals.

Jared Young, PsyD, CAADC, LCSW, CCM

Commissioner and Past Chair of the Commission

I began my career as a licensed clinical social worker (LCSW) in a mental health and substance abuse treatment center. From there, I went to work at a managed care company as a case manager/care coordinator. At the encouragement of my employer, I pursued CCM certification in 2003. As a CCM, I saw first-hand how care coordination benefited people. From my perspective, care coordination sits at the intersection of physical health, mental health, and community to help people lead healthier lives.

Today, I have more than 20 years of clinical experience in mental health and substance abuse treatment, as well as behavioral health and physical health managed care. Throughout this journey, I have derived professional value and personal satisfaction from exploring new areas and fields of knowledge.

I have taken this spirit of curiosity and lifelong learning into other areas of my life. My daughter, who is 23 years old, and I came up with 12 new things we wanted to try during the year—one activity for each month. We did scuba diving, rock climbing, and kayaking—just to name a few. Each activity introduced us to new experiences, some we won't continue (scuba diving) and others that are part of our lives (we bought kayaks and love paddling down the Susquehanna River). When I've shared this story, other people have felt inspired to make their own list of activities to try—whether that means an outdoor activity, volunteering in the community, or even going back to school. Engaging in something new helps us grow as we learn more about ourselves and where we find our passions.

Across all disciplines and care settings, as case managers we are the "quarterbacks" of the care continuum. To support each client (or "patient" in some care settings) and their support systems/families, we must remain objective, tune out the noise and distractions, and focus on helping clients and their family caregivers make informed plans and decisions.

Lisa Cook Bayer, JD, CCM, CDP

Commissioner

My professional career began as a substitute teacher while still in college. Upon graduating I went into case management, working at Boston Senior Home Care, a nonprofit organization overseen by the Executive Office of Elder Affairs. I've always had a passion for public interest law and health. After earning my law degree, I worked with Mobilization for Justice (formerly MFY Legal Services) in New York City, specializing in Social Security law.

The next phase of my professional journey led me to establish a private case management company with a focus on older adults, people living with disabilities, and their family caregivers. I am a passionate advocate for individuals and their support systems/families as they navigate complex transitions along the care journey.

Across all disciplines and care settings, as case managers we are the "quarterbacks" of the care continuum. To support each client (or "patient" in some care settings) and their support systems/families, we must remain objective, tune out the noise and distractions, and focus on helping clients and their family caregivers make informed plans and decisions.

Another aspect of my professional journey began soon after I became a Board-certified case manager in 2009. After volunteering with the Commission for several years I was elected to the Board in 2021. I am deeply committed to the Commission's mission of promoting professional excellence and ethical practice, as well as professional development and consumer protection. Today, I am so proud to be a Commissioner—giving back to an organization and a profession that has given me so much! I believe that being certified has made me a better practitioner and a better person. CM

***Patty Nunez, MA, CRC, CDMS, CCM**, is Chair of Commission for Case Manager Certification (CCMC), the first and largest nationally accredited organization that certifies more than 50,000 professional case managers and disability management specialists. The Commission oversees the process of case manager certification with its CCM® credential and the process of disability management specialist certification with its CDMS® credential. Triple certified as a CCM, CDMS, and CRC, Patty recently retired from the Claim Vendor Management office of CNA. She resides in Southern California and remains active with the Commission, as a volunteer with professional organizations, and as an advocate.*

***Jared Young, PsyD, CAADC, LCSW, CCM**, is a Commissioner and past chair of the Commission. His counseling practice focuses on improving interpersonal relationships and communication within families, couples, and individuals. His passion is helping clients manage life transitions, loss, anxiety, anger, depression, family conflict, addictions, and chronic illness.*

***Lisa Cook Bayer, JD, CCM, CDP**, is also a Commissioner. A licensed attorney, she is a board-certified case manager (CCM), an advanced professional member of the Aging Life Care Association, and a Certified Dementia Practitioner. She is the owner and president of LMR Elder Care, LLC, advocating on behalf of clients and their families in areas such as power of attorney documents, family elder care mediation, long-term care facility agreements, long-term care insurance, Medicaid and asset protection planning rules and requirements, and guardianship matters.*

2024: CMSA's Year of Impact Through Education, Collaboration, and Advocacy in Motion

By Colleen Morley-Grabowski, DNP, RN, CCM, CMAC, CMGT-BC, CMCN, ACM-RN, FCM, FAACM

As I began the last 6 months of my tenure as President of the Case Management Society of America (CMSA) in January 2024, I was thrilled to continue the work of advancing our mission to support, elevate, and empower case managers across the country that was a key goal of my entire presidency. In June 2024, I proudly transitioned the role of President to Janet Coulter. It has been a privilege to serve in this capacity, and as I stepped into the role of Immediate Past President, I pledged to continue to support CMSA's mission and initiatives alongside our dedicated members, partners, and leaders.

CMSA remains steadfast in its mission to support and elevate the case management profession through education, advocacy, and collaboration. As we reflect on the achievements of 2024, CMSA has demonstrated its commitment to fostering excellence, improving outcomes, and promoting the value of case management. This year was marked by groundbreaking educational initiatives, strengthened collaborations, impactful public policy efforts, and a thriving, growing membership. Here, we highlight CMSA's key accomplishments and its contributions to advancing case management.

Colleen Morley-Grabowski, DNP, RN, CCM, CMAC, CMCN, ACM-RN, FCM, *is Immediate Past President of the Case Management Society of America National Board of Directors and principal of Altra Healthcare Consulting in CO).*

Education

Education remained a cornerstone of CMSA's efforts in 2024, with a focus on accessible, diverse, and high-impact learning opportunities for case managers across settings. CMSA delivered 21 educational webinars, reaching over 8,528 participants. These sessions provided critical insights into emerging trends, evidence-based practices, and innovative tools to enhance professional practice. One standout highlight was the 2024 Annual Conference & Expo held in Providence, Rhode Island. This event created a space for robust discussions, valuable networking, and skill-building opportunities for case managers nationwide.

The Cost of Poverty Experience (COPE), an immersive virtual session attended by 35 participants, offered a powerful perspective on the lived experience of individuals navigating poverty. As a case manager, participating in such programs brings a new level of empathy and understanding to our work. It is easy to focus solely on clinical or administrative outcomes, but COPE reminded us of that social determinants of health are often the most significant barriers our patients face. This experience left me with a renewed sense of responsibility to advocate for patients holistically and address the systemic challenges they encounter.

CMSA continued to strengthen its educational resources, publishing 75 articles in *CMSA Today* and 110 impactful blogs that offered both practical advice and personal storytelling. Over 16,400 CE certificates were issued from 127 educational sessions, ensuring case managers have access to continuous professional development. Notably, CMSA expanded CE offerings during Case Management Week, adding specialized credits such as CMC, CNLCP, CDMS, and CDMS Ethics to the existing RN, SW, CCM, and CCM Ethics certifications.

The release of the Diversity, Equity, Inclusion, Belonging (DEIB) and Health Equity addendum to the Standards of Practice reflected CMSA's leadership in ensuring that diversity, equity, inclusion, and belonging remain central to case management. For me, this addition was both timely and necessary. As healthcare professionals, we see firsthand the inequities that can exist within the system, and the Standards of Practice provide us with a clear framework to advocate for fairness, equity, and improved outcomes for all populations.

Reflecting on these achievements, it is clear that CMSA's education initiatives are more than numbers; they represent transformative opportunities that elevate the profession and empower case managers to deliver exceptional care. For case managers, these tools are not just professional resources—they are pathways to improving the lives of our patients every day.

Public Relations and Public Policy

In 2024, CMSA amplified its advocacy efforts to ensure that case management remains recognized as a cornerstone of quality healthcare. The Annual Virtual Hill Visits were a

The work accomplished in 2024 continues to build upon our strong foundation for future success, ensuring that case managers continue to play a vital role in improving patient outcomes and navigating the complexities of modern healthcare.

defining moment, bringing case managers together to directly engage with policymakers. These visits emphasized the need for policies that promote better patient care and recognize the essential role case managers play in healthcare systems.

Participating in advocacy efforts like the Virtual Hill Visits reminds us of the importance of our voice as professionals. Often, the challenges we experience on the frontlines of healthcare are not fully understood by policymakers. Having the opportunity to share real-world stories of patient outcomes, resource allocation, and the critical role of case managers ensures that our profession's value is both seen and understood at the highest levels.

CMSA's enhanced *Policy Update Newsletter* kept members informed of evolving healthcare policies and legislative actions. In addition, CMSA launched new Case Management Fact Sheets to educate healthcare peers, patients, and caregivers about the critical contributions of case managers. These tools bridged gaps in understanding and reinforced the profession's value.

A key achievement was the release of the position paper "Promoting Successful Outcomes in Making Care Primary: The Role and Value of Case Management." This document articulates the unique and necessary role case managers play in ensuring positive outcomes in patient care. As a case manager myself, I see this paper as both a resource and a call to action—a reminder that our work is central to transforming healthcare delivery. Reading through this position paper gave me a deep sense of pride in the role we play as advocates, facilitators, and leaders within an increasingly complex healthcare system.

Membership and Recognition

CMSA's membership continued to thrive in 2024, welcoming over 1,100 new members, including 10 new Company Membership Accounts. This growth highlights the increasing recognition of CMSA as a vital professional community for case managers at all stages of their careers. The success of Case Management Week 2024 further underscored the value of member engagement, with over 2,000 case managers participating in events that celebrated their dedication and achievements.

The energy and pride during #CMWeek2024 were palpable, reminding us of the profound impact case managers have on patients' lives. For me, these celebrations are more than a recognition of our work—they are a chance to connect with others who share the same passion for making a difference. Seeing the shared commitment among our peers reaffirms why we do what we do, even on the hardest days.

CMSA also celebrated its Fellow Class of 2024, honoring professionals who exemplify leadership and innovation in case management. Volunteers played a significant role in CMSA's accomplishments, with 170 individuals contributing their time and expertise across 17 committees and task groups. This spirit of volunteerism is at the heart of CMSA's success.

Chapters remained vital hubs for connection and education, with 42 chapters providing value to members through local initiatives. Special interest groups (SIGs) focusing on International, Military/VA/DoD, and Rural case managers added new dimensions to CMSA's networking opportunities. Nine virtual sessions allowed members to share experiences and build connections across diverse practice settings. These networking opportunities have provided me with insights into challenges I may not encounter in my day-to-day practice, broadening my perspective and deepening my professional toolkit.

The growth and engagement seen in CMSA's membership community are a testament to the power of collaboration and shared purpose. As a case manager, I find that the connections made within this community are invaluable to my professional growth and the quality of care I provide. CMSA's vibrant network serves as both a resource and a source of inspiration.

Collaborations and Partnerships

CMSA's commitment to fostering partnerships remained strong in 2024, with collaborations that amplified its reach and impact. Relationships with organizations such as the American Association of Nurse Life Care Planners (AANLCP), American College of Physician Advisors (ACPA), and National Adult Day Services Association (NADSA) continued to yield positive outcomes. New affiliate

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Legal Updates

By Elizabeth E. Hogue, Esq.

Use of Case Management/Discharge Planning to Reduce Length of Stay

Many hospitals are laser-focused on reducing length of stay in order to enhance patient experiences and boost financial performance. A recent study by KFF shows that the average adjusted expense per patient day at hospitals in 2022 was $3,102.50.

Kenneth Kaufman, managing director of Kaufman Hall, observed in a blog post earlier this year that reductions in length of stay can produce dramatic increases in savings. Mr.

The use of discharge planners/case managers to manage length of stay is not new and isn't based on potential reductions in length of stay with resulting savings and increased revenue.

Kaufman pointed out that if a hospital with 425 beds that has an average length of stay of 6 days achieved a reduction in length of stay of 1 day, the hospital would save at least $20 million in operating expenses per year.

An increasing number of healthcare leaders are now advocating for discharge planners/case managers to play a key role in care coordination, including reductions in length of stay.

Perhaps healthcare managers have lost sight of the fact that discharge planners/case managers have been required to fulfill this role for quite some time based on Conditions of Participation (CoPs) of the Medicare Program for discharge planning. According to 42 CFR 482.43 Condition of participation: Discharge planning, discharge planners/case managers are required to:

- Identify patients who need discharge planning early in their inpatient stays
- Evaluate patients in need of discharge planning to identify the need for post-hospital services, including the availability and accessibility of these services
- Regularly re-evaluate patients' conditions to make needed changes in discharge plans
- Provide necessary medical information to implement discharge plans

Elizabeth E. Hogue, Esquire, *is an attorney who represents healthcare providers. She has published 11 books, hundreds of articles, and has spoken at conferences all over the country.*

The use of discharge planners/case managers to manage length of stay is not new and isn't based on potential reductions in length of stay with resulting savings and increased revenue. Rather, case management is a discipline that is well-defined by standards of care published and periodically revised by the Case Management Society of America (CMSA).

Hospital leaders may marvel at their discovery of discharge planning/case management as a tool to assist patients and manage revenue, but the fact is that case management/discharge planning has been required for some time in order to maintain certification by the Medicare Program.

While newfound support is welcome, the role and contributions of case managers/discharge planners is long-standing and well known, especially among patients and post-acute providers. Perhaps now hospital leaders will share appreciation of the value of case management/discharge planning more often. CM

CMS Issues Revised Guidance for Surveyors for Findings of Immediate Jeopardy

On November 21, 2024, the Centers for Medicare & Medicaid Services (CMS) issued revised guidance for surveyors and all types of providers regarding findings of "immediate jeopardy" during surveys. Findings of immediate jeopardy are very serious and put participation in Medicare and Medicaid Programs at risk. The most recent changes in the guidance are intended to clarify and increase consistency in identification of situations of immediate jeopardy.

Here are key provisions of the new guidance:

1. When patients have not already experienced serious harm, surveyors may find that there is immediate jeopardy when there is a likelihood that serious injury, harm, impairment or death will occur if the identified areas of noncompliance are not corrected. CMS defines "likelihood" as a reasonable expectation that serious harm will occur. In previous guidance, surveyors could make findings of immediate jeopardy if there was "potential" for serious harm, as opposed to the likelihood of harm as described above.
2. Surveyors are no longer required to show culpability as a required element of immediate jeopardy citations. Instead,

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CE1 Approved for 1 hour of CCM, CDMS, and nursing education credit
Exam expires on August 17, 2025

Perinatal Depression: Improving Quality of Care and Patient Outcomes

By Deetta K. Vance, DNP, PMHNP-BC, FNP-BC

Despite the high incidence of perinatal depression, this condition is widely underdiagnosed and undertreated. When evaluating and caring for this population of patients, clinicians should be aware of the three levels of perinatal depression–"baby blues," postpartum depression, and postpartum psychosis. Although there is no identifiable cause of perinatal depression, there are similar risk factors present in women who are impacted by perinatal depression, including being unemployed, single, first-time mothers; having low socioeconomic status; and facing cultural-related disparities. Common presentation of perinatal depression includes feelings of anxiety or depressed mood; failure to connect with the newborn; feelings of abandonment, being unloved, or unwanted; and feeling overwhelmed (Simhi et al., 2019). Mental health screenings are key in identifying any level of perinatal depression and should be administered routinely during pregnancy and for a year following childbirth.

Nursing intervention stands to take a significant role in the identification, screening, referral, and management of women who are experiencing perinatal depression. Because the obstetrician's (OB's) focus remains on the pregnancy and health of the fetus, mental health is not widely addressed until the patient reports symptoms. The mother may not be aware that there is a problem, which leaves symptoms unmanaged, increasing the chance of a negative outcome for the mother or the fetus. A case management nurse, trained in understanding the symptoms and effects of perinatal depression, is instrumental in supporting mothers through what can be a frightening and isolating time. The opportunity exists for the aware case management nurse to identify problems, and not only work quickly to connect the mother to an appropriate healthcare provider, but to also serve as a support and engage in follow-up communication to ensure the safety of both the mother and the infant (Coffman et al., 2020).

Deetta K. Vance, DNP, PMFNP-BC, FNMP-BC, *is an Assistant Professor at the School of Nursing, College of Health and Human Services, Indiana State University, and a practicing psychiatric mental health nurse practitioner.*

Perinatal Depression and Case Management Nursing Implications for Intervention

Perinatal depression is an undertreated, and often, unrecognized mental health condition that occurs from prior to birth of the child until up to a year following the birth. Failure to intervene early after the development of mood changes and instability can lead to negative outcomes mentally and physically for both the mother and infant (Balamurgan et al., 2023). As a case management nurse, it is imperative to understand the importance of routine screenings and presentation of symptoms associated with "baby blues", postpartum depression, and postpartum psychosis. Perinatal depression manifests in a variety of ways, and although there is no identifiable cause, similar risk factors present in women impacted by perinatal depression, including employment status, single parenthood, being a first-time mother, living at a low socioeconomic status, as well as cultural background implications. Postpartum depression is the most known level of perinatal depression, with approximately one in eight women experiencing symptoms. Symptoms include feelings of anxiety, depressed mood, failure to connect with the newborn, feelings of abandonment, being unloved or unwanted, and feeling overwhelmed (Simhi, et al., 2019).

The rapid physiological changes that occur in women following the birth of a child, including shifts in hormones, body image changes, and results of sleep deprivation from caring for the infant often lead to a transient overwhelming experience. If those feelings last longer than 2 weeks, or if the mother experiences continued anxiety, depression, or thoughts of suicide, she should be evaluated for perinatal depression immediately. Awareness of risk factors and screenings by and referral sources from the case management nurse stand to greatly impact outcomes of women in the perinatal period (Office on Women's Health, 2024).

The mother may not be aware that there is a problem, which leaves symptoms unmanaged, increasing the chance of a negative outcome for the mother or the fetus.

Defining Severity Levels of Postpartum Depression

"Baby Blues"

The "baby blues" is a level of perinatal mood that typically occurs within 3 days of childbirth and can last up to 2 weeks. Approximately 60% to 80% of women are affected by this transient condition due to fluctuating hormones, anxiety related to caring for the vulnerable infant, and exhaustion. Women experiencing the "baby blues" may experience sudden shifts in mood, irritability, sadness, anxiety, changes in appetite, and difficulty sleeping. Mood changes should resolve within 2 weeks; however, if symptoms persist, postpartum depression should be considered (Allen, 2017).

Postpartum Depression

Approximately 10% of women experience postpartum depression, and this level of perinatal depression is the most well-known mood change occurring after childbirth. Symptoms typically start within a few weeks of childbirth, however, but can occur suddenly and without warning for up to a year postpartum. Patients experiencing postpartum depression may not understand mood changes, whether they are anxiety, depression, or a combination of both. These feelings are typically more intense, may or may not impact the mother's ability to care for the infant, and decrease the ability to care for self, including completion of daily tasks. Presentation of symptoms include crying excessively; feelings of detachment from the newborn; fear of being a "bad mother"; or development of feelings of hopelessness, worthlessness, shame, inadequacy, and intense irritability. Clinicians should also be aware that mothers may be managing tasks at home and coping with caring for the infant; however, they should be evaluated for the level of life enjoyment the mother is experiencing (PSI, 2023).

Postpartum Psychosis

Postpartum psychosis is a rare development that occurs within the first week following childbirth. Women experiencing schizophrenia, bipolar disorder, or postpartum psychosis after a previous pregnancy are at increased risk of postpartum psychosis development. Mothers experiencing postpartum psychosis may exhibit feeling confused or lost, persistent and intrusive thoughts regarding the infant, hallucinations or delusions, severe sleep difficulties, paranoia, and possible thoughts of self-harm or harming the infant. Postpartum psychosis is a medical emergency and should be addressed immediately in an emergency department due to the danger to both mother and infant. Untreated postpartum psychosis has led to increased incidence of infant harm; maternal suicide; and cognitive, language, and social deficits in the infant (Biagi, et al., 2023).

Screening for Perinatal Depression

There are two main screenings used to evaluate both pregnant and postpartum women for changes in mood. Recommendations for screening include during the first prenatal visit, at least once during the second trimester, once in the third trimester, and the 6-weeks' postpartum. In addition, screenings of the mother are recommended in the pediatric office at the 3-, 6-, and 9-month wellness visits (Postpartum Support International (PSI), 2023).

- Patient Health Questionnaire–9 (PHQ-9): This is a self-administered screening that objectively measures the degree of depressive symptoms impacting quality of life, work, and social interactions for the 2 weeks prior to the screening. A score greater than 10 would indicate a need for referral, and further evaluation of symptoms and treatment by both nonpharmacological and pharmacological methods (PSI, 2023).
- Edinburgh Postnatal Depression Scale (EPDS): This is a self-administered screening that objectively measures how the mother has been feeling in the last 7 days. A score greater than 10 indicates a need for referral and intervention. The EPDS has shown reliability and validity when used on fathers, because, at times, screening the father is also recommended based on the clinician's clinical judgment (PSI, 2023).

The American College of Obstetricians and Gynecologists (ACOG) states that screening alone is an ineffective method of reducing perinatal depression, and it recommends intervention when indicated. Further, strong recommendations are in place for OBs to initiate first-line medication therapy and refer to a behavioral health specialist, when needed, based on screening results (ACOG, 2023).

Risk Factors for Development of Perinatal Depression

There is no known cause relative to the development of perinatal depression; however, there are many factors that consistently exist in women diagnosed with the condition. Risk

ACOG states that screening alone is an ineffective method of reducing perinatal depression, and it recommends intervention when indicated.

factors include unemployment, single motherhood, first-time motherhood, low socioeconomic status, and cultural-related disparities, including poor access to prenatal care or insurance. Additionally, illness or traumatic experiences during current or subsequent pregnancies, caring for an ill child from a previous birth, history of depression or other mood disorders such as bipolar disorder, a history of abuse, and having a poor support system are all factors known to contribute to increased risks for development of perinatal depression. Case management nurses should interview the patient for a full history to understand the presence of risk factors and obtain screenings of these individuals regularly to be able to intervene quickly if mood changes occur (Balamurgan et al., 2023).

Case Study

History of Present Illness

A 40-year-old woman who gave birth 3 months previously to her fifth child presented alone to the emergency department for a second time in a week with a previous history of post-traumatic stress disorder (PTSD), anxiety, and depression. She appeared tearful, unkempt, and with an obvious self-care deficit. When learning she was pregnant, she discontinued all medications related to mental health including fluoxetine, prazosin, propranolol, hydroxyzine, and buspirone due to possible side effects related to the safety of the fetus. She reported that her OB was aware of her mental health history. Therapy was not active or offered during the pregnancy. Mental health medications were not restarted on the birth of the child despite OB awareness. In addition, the patient completed multiple PHQ-9 screenings, scoring in the severe depression range; however, symptoms were not addressed.

Symptoms

The patient reported feelings of worthlessness, hopelessness, abandonment, and anger. She stated extreme difficulty in bonding with her baby, which became distressing. Other symptoms reported included absent appetite, severe insomnia lasting several consecutive days, excessive obsessive, intrusive thoughts, as well as panic attacks triggered by thoughts of someone stealing her baby or her baby being dead. She admitted that nightmares about her newborn and other four children dying or dead seemed vivid and intense. She reported constant anxiety that the baby was getting sick and feeling that no one loved her or cared about her. She cried constantly but denied thoughts of self-harm or harm to the newborn. However, the patient stated she had thoughts that no one would miss her if she were dead. She reported that symptoms became worse about a week ago when it was discovered her newborn had a milk allergy, and she had to stop breastfeeding. She felt as if she failed as a mother despite having a healthy newborn and four other healthy children.

Possible Risk Factors of Development of Postnatal Depression

On further inquiry, the provider discovered the following risk factors:

- The patient suffered an accidental fall at 32 weeks' gestation with injury. Before the accident, she was consistently physically active every day, attending classes at Orange Theory Fitness, 5 days a week; however, the injury left her immobile and isolated to bed or chair rest for the rest of the pregnancy.
- She received synthetic oxytocin to induce labor at 39 weeks' gestation.
- Screening with a PHQ-9 occurred in the OB's office before birth, in the hospital after birth, at the 6-week postpartum evaluation, and at the pediatrician's office, with positive results ranging from 15 to 21 (moderate depression to severe depression). However, no intervention was ever implemented despite a phone call promised by staff from a mental health services agency.
- The OB's office was notified on several occasions of worsening mood changes with a requested referral to mental health services from 3 week's postpartum but never received a call from the mental health services agency.

Emergency Department Plan of Care/Discharge Instructions

A referral to a mental health professional was made during the ED visit. After a wait of more than 12 hours, the provider advised she should be discharged, and a referral was made to an outpatient mental health provider, as well as to case management. During the ED visit, no medications were provided apart from intravenous fluids. No medications were prescribed. Laboratory work, including a complete blood count, complete metabolic panel, and a thyroid panel, were drawn, and results were normal. There were no additional screenings conducted during the visit.

Consequences of Delayed Intervention

Although the patient discussed in the above case study was eventually treated for postpartum depression, there were significant delays in diagnosis and intervention that put the mother at risk for worsening symptoms, further decreased her ability to care for the infant, decreased her quality of life, increased risk of harm to mother and infant and development of postpartum psychosis, and potential development of persistent and permanent mood changes, such as major depressive disorder. Understanding the risks of untreated perinatal depression as well as the importance of implementing routine evaluation of both pregnant and postpartum women is an essential function of the case management nurse, leading to improved outcomes for patients.

Barriers to Identification and Management of Postnatal Depression

Processes within the healthcare system and mothers' socioeconomic status are fundamental barriers to managing perinatal depression, keeping this population of patients from accessing care and increasing the risk of a negative patient outcome. Nurses, including those working in case management, are tasked with identifying women who are at risk or have developed perinatal depression symptoms and initiating referrals to appropriate sites of care; however, many nurses report barriers to addressing symptoms and providing timely and accessible referrals. According to Arefadib et al (2022), nearly 80% of women who are identified as having perinatal depression symptoms receive no professional support or treatment. Further, mothers of a low socioeconomic status are most vulnerable due to having government health insurance and decreased availability of providers who accept that insurance (Arefadib et al, 2022).

Barriers in Healthcare Provider Processes

Many healthcare providers admit to reduced time and knowledge to adequately assess and treat perinatal depression. The first opportunity for identifying and treating perinatal depressive symptoms often falls on the OB who may downplay the importance of the symptoms or feel that management of mental illness falls outside their scope of practice. Lack of consistent screening, intervention processes, and referral sources within the OB's office delays management of perinatal depression symptoms. Some processes within healthcare organizations also limit direct referrals to psychiatric care or require the patient to be evaluated by the OB or general practice provider before referring to psychiatric services. In some cases when patients are referred to mental health services for evaluation and care, communication between the referring provider and mental health provider is poor, which further complicates and delays access to appropriate care (Arefadib et al, 2022).

Socioeconomic Barriers

Socioeconomic barriers include cultural disparities and stigmas, as well as lack of access to care or sufficient insurance coverage. When patients experience perinatal depression symptoms and are responsible for caring for an infant without support often will not keep appointments due to lack of finances or transportation. Mothers experiencing perinatal depression symptoms also find it challenging to travel with an infant alone, and with no option for home or telehealth services in underserved areas, may not follow through with a referral source. The patient's personal or cultural views toward the presence of mental illness and treatments and the relationship between patient and OB can negatively affect the mother's help-seeking behaviors, especially if her concerns are not validated by the healthcare provider. Disparities also exist in perinatal depression care and support among culturally diverse populations due to language barriers and stigma (Arefadib et al, 2022).

Nurses report that even with positive perinatal depression screenings (score greater than 10 on PHQ-9 and/or EPDS), it has been difficult to obtain professional intervention for women affected by perinatal depression. Nurses also continue to face lack of adequate time to address symptoms presented, lack of knowledge, and decreased availability of resources (Arefadib, 2022).

Role of the Case Management Nurse in Screening and Intervention

Nursing intervention has a significant role in the identification, screening, referral, and management of women who are experiencing perinatal depression. Considering the discussion of barriers to accessing appropriate care, often the OB's office is ill-equipped to handle moderate to severe cases of perinatal depression due to lack of process or time; however, that is typically the site of care that the mother leans on for care during this time. Mental health screenings, such as the PHQ-9 and the EPDS, are frequently conducted in the immediate postpartum period; however, it is a common occurrence that results of these screenings are not addressed, simply because either the OB feels that mental health concerns fall outside of scope of practice, or there is a lack of access to care for the mother. The mother's perinatal depression is then left unmanaged, and this can lead to devastating results, including increased risks of death or injury to the mother and/or the infant (Coffman et al., 2020).

Developing policies to put screenings and interventions in place for early identification of perinatal depression symptoms is a key nursing function that stands to reduce risks associated with perinatal depression, as well as improve the quality of life for both the mother and the infant (Simhi, et al., 2019). The mother may feel embarrassed about her symptoms or may not

Risk factors include unemployment, single motherhood, first-time motherhood, low socioeconomic status, and cultural-related disparities, including poor access to prenatal care or insurance.

understand or recognize that the symptoms are abnormal. Therefore, a case management nurse who is trained in understanding the symptoms of perinatal depression is instrumental in compassionately and sensitively supporting mothers through what can be a frightening and isolating time. Case management nurses should seek to participate in initiatives to create and support the development of alternative options such as telehealth services and home visits for patients unable to travel to an appointment. Most importantly, the case management nurse's role as communicator and mediator is essential in facilitating connections between obstetrics, emergency services, general practice healthcare providers, and mental health services. Working to address known barriers through communication and quality improvement initiatives is key in improving outcomes for this population (Arefadib, 2022).

Conclusion

In the current healthcare climate, perinatal depression is often underdiagnosed and undertreated for many reasons resulting from healthcare provider processes and socioeconomic barriers associated with the condition. Improving communication and providing culturally sensitive and compassionate care, including participation in quality improvement initiatives and healthcare policy for mothers experiencing perinatal depression is an essential role of the case management nurse as a patient advocate. From a case management standpoint, opportunity exists for the aware case management nurse to identify that the mother is experiencing a problem and not only work quickly to connect her to a healthcare provider who can help her effectively, but also serve as a support and engage in follow-up communication to ensure the safety of both the mother and the infant. CE 1

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Music Therapy and Health, Part 2: Music Therapist as Part of the Interdisciplinary Team

By Dawn A. Iwamasa, PhD, CCLS, MT-BC; and Flor del Cielo Hernandez, PhD, MT-BC

Part 1 of this article was featured in the December/January issue of CareManagement.

Music Therapist as Part of the Interdisciplinary Team

Music therapy is an allied health profession that uses evidence-informed music interventions to achieve individualized therapeutic goals. Interventions such as listening to, creating, singing, or discussing music address the physical, emotional, cognitive, and social needs of individuals. Music therapists are trained professionals who design and implement these interventions. In the US, they must pass a national certification exam and practice with the MT-BC credential, or Music Therapist-Board Certified. In this article, we will discuss the benefits of including a music therapist in your interdisciplinary team and provide case study examples.

The inclusion of music therapists in interdisciplinary care teams brings numerous benefits (Mandel, Davis, & Secic, 2019). These include reducing feelings of isolation for the patient, enhancing patient satisfaction, and supporting common goals among healthcare disciplines. Music therapy encourages self-expression, respects cultural and individual preferences, and educates patients and families on illness management (Hanser, 2018; Silverman, 2022). This comprehensive approach improves patient outcomes, strengthens family involvement, humanizes patient care, and fosters a sense of community and belonging.

Music therapists are trained to work collaboratively as part of the treatment team (American Music Therapy Association, 2013), and case managers have an important role in coordinating care, including involvement of a music therapist as part of an individual's treatment plan. When considering a music therapist, case managers should seek a qualified music therapist with board credentials (MT-BC). Music therapy outcomes are categorized into four domain areas: physical, cognitive, communication, and socioemotional. Additionally, music therapy is accessible to individuals of all ages and stages of life, from the neonate to the hospice patient. Moreover, individuals do not require prior experience or musical training to benefit from therapy.

Music therapists work in a variety of settings such as schools, hospitals, hospices, and behavioral health centers. In all settings, music therapists develop a treatment plan based on the individual's needs and in consultation with other professional providers. In many cases, music therapists will have shared goals with other team members. Individuals may also be referred to music therapy when they stop responding to traditional treatment, have lack of motivation to participate in treatment, or need nonpharmacological interventions as an adjunct to medication therapy. Collaboration is especially effective for individuals who have complex needs that often involve physical, psychological, and social care (Twyford, 2015). Additionally, the treatment team may seek a creative and innovative approach to care that is wholistic in its approach (Twyford & Watson, 2008).

The following list provides examples of music therapy outcomes possible by domain area:

- **Physical Domain:** Pain reduction, fine and gross motor skill development and rehabilitation, gait training, respiratory function, and exercise motivation and endurance
- **Cognitive Domain:** Improved attention, memory, executive functioning, language processing, visual and auditory perception
- **Communication Domain:** Expressive language, receptive language, nonverbal communication, oral motor coordination, verbal fluency, and speech rehabilitation
- **Socioemotional Domain:** Emotion identification, emotion regulation, turn-taking, sharing, social connection, stress management, problem-solving, self-esteem, and participation

Dawn A. Iwamasa, PhD, CCLS, MT-BC, *is an Assistant Professor of Music Therapy at Florida State University at Tallahassee, FL, and Board Certified in music therapy.*

Flor del Cielo Hernandez, PhD, MT-BC, *is an Assistant Professor of Music Therapy at Florida State University, Tallahassee, FL, and Music Therapist at Better Living Solutions, Tallahassee, FL.*

Individual music therapy provides focused attention tailored to the patient's identity, needs, pacing, and therapeutic goals.

Additionally, music therapy was found to decrease hospital length of stay (Adams, 2005; Caine, 1991; Chorna et al., 2014; Standley & Swedberg, 2011; Zhou et al., 2015), decrease opioid pain medication use (Lee, 2016), increase readiness and motivation for treatment (Silverman, 2012; Silverman, 2015), and increase patient satisfaction (Mercier et al., 2023; Van der Wal-Huisman et al., 2018; Yinger & Standley, 2011).

The most common barriers to music therapy access are the lack of understanding of the music therapist role and contributions, being unknown to the team and case manager, and the limited number of music therapists practicing in the US. Teams with integrated music therapists find tremendous value in their outcomes; however, music therapists report a lack of understanding of their role by staff, instead perceived to keep patients occupied or happy (Magee & Andrews, 2007). On the other hand, successful collaboration allows music therapists to share knowledge, advocate for, and advance the profession (Twyford & Watson, 2008). Another barrier to access is the limited number of practicing music therapists. There are approximately 10,000 MT-BCs worldwide (CBMT, 2023) and the majority practice in the US. However, music therapy is not a standard of care in many environments, and case managers may also find it difficult to find an available therapist in their community.

Individual and Group Music Therapy

For inpatient, outpatient, community, school, and homebound settings, there are benefits for individual and group music therapy. Individual music therapy provides focused attention tailored to the patient's identity, needs, pacing, and therapeutic goals. These sessions provide a unique environment in which patients can express their thoughts and feelings openly without fear of judgment.

Group music therapy encourages collective music-making, allowing participants to practice social and communication skills in a safe and structured setting. By creating these spaces, patients learn from each other's diverse backgrounds and needs, while interacting and supporting one another throughout their individual processes. A sense of shared goals in group therapy is motivating and encouraging. Patients observe and learn from the behaviors and coping strategies of others, and group members provide constructive feedback and encouragement, which fosters personal growth. However, different settings often prioritize or are more conducive to either individual or group music therapy.

Caregiver and Family Participation

Reflecting on song lyrics or making music together creates spaces in which caregivers and caretakers exist outside their responsibilities, allowing them to participate equally in music and temporarily set aside challenges. For instance, a music therapist might design sessions using improvisation or active music-making to enhance nonverbal communication, fostering a sense of community, belonging, and normalcy. This provides valuable support for caregivers, helping them cope with responsibilities, improve mental health, and enhance their quality of life. Participating in music therapy sessions together strengthens bonds and improves communication, thereby enabling positive emotional connections.

A caregiver-only group offers a supportive environment for emotional relief by reducing stress and burnout and making connections among participants. Music-making activities also enhance caregivers' well-being and provide a much-needed break from their demanding roles.

Case Vignettes

Healthcare Setting

Pedro is a 35-year-old man who was involved in a severe car accident, resulting in a traumatic brain injury (TBI). This injury led to an extended hospital stay and a challenging recovery journey. On arrival at the hospital, Pedro was immediately admitted to the intensive care unit (ICU) and placed in a medically induced coma. Initial diagnostic tests, including a CT scan and MRI, revealed a diffuse axonal injury.

During his month-long stay in the ICU, the medical team, consisting of neurologists, neurosurgeons, and critical care specialists, closely monitored his progress. Once Pedro was stable enough, he was transferred to the neurorehabilitation unit for further recovery. Pedro struggled with short-term memory loss, decreased attention span, and expressive aphasia. Additionally, he experienced coordination and balance issues, which affected his ability to perform precise movements. Emotionally, Pedro experienced panic attacks and depressive episodes marked by profound sadness and a lack of interest in activities he once enjoyed.

As part of the treatment team meeting, the neurologist,

Group music therapy encourages collective music-making, allowing participants to practice social and communication skills in a safe and structured setting.

psychologist, nurses, speech and occupational therapists, social worker, music therapist, and case manager discussed Pedro's overall challenges and identified goals along with a suggested timeline to transition from inpatient to outpatient care. The treatment team decided to focus on four primary goals: improve short-term memory, enhance motor skills, increase emotional regulation abilities, and improve expressive language.

Pedro's Treatment Plan

The music therapist designed interventions to support the stated goals, combining generalized music therapy techniques with specific therapeutic protocols known as Neurologic Music Therapy (NMT), while using music as a motivator.

Improve Short-term Memory

Using patient-preferred music, the music therapist designed interventions to improve Pedro's memory. Listening to familiar music with lyrics provided encoding for immediate recall of information contained in the song (Bleibel et al., 2023). Recreative techniques reinforced neural networks essential for accessing long-term memory such as word recall. For example, singing familiar songs prompted Pedro to remember lyrics and share memories (Silverman, 2019). The therapist's training enabled the use of live music to adjust the tempo, key, lyrics, and style in real time, catering to Pedro's preferences and engagement level. Live music also fostered an interactive and nonthreatening environment, enhanced emotional connection and encouraged active participation, which further supported memory recall and cognitive processing (de l'Etoile, 2014; Thaut & Gardiner, 2014).

Enhanced Motor Skills

Music-based movement activities allowed Pedro to practice and regain functional movements through therapeutic instrument music performance (TIMP). The NMT technique uses music instruments to regain movements such as limb coordination, range of motion, balance, dexterity, and grasp (Mertel, 2014). For example, the therapists set conga drums on each side of Pedro and instructed him to sway from side to side while standing, shifting his weight from one leg to the other, and simultaneously playing the drums with his hands to the beat of the song. This allowed Pedro to practice balance and weight-shifting while strengthening his upper legs (Mertel, 2014). Adjusting the tempo of the music also allowed Pedro to practice motor planning through synchronization to the beat.

Increase Emotional-Regulation

Effective communication is key to emotional regulation. The music therapist worked with Pedro to identify emotions such as "joy," "sadness," and "frustration" while listening to and recreating familiar music. They explored how these emotions were reflected in elements of the music (such as tempo, key, and dynamics) and how his body responded to these shifts (Sena Moore, 2013). Pedro expressed himself through singing and playing instruments, thereby increasing his awareness of emotions and how they affect him and others, which led to better emotional regulation. These techniques aimed to improve Pedro's communication with his medical team and family, enhancing both verbal and nonverbal interactions.

Group music therapy sessions were designed to promote social connections and decrease feelings of isolation. In Pedro's case, the group setting enhanced his practice and understanding of emotional regulation. Group participants collaborated in listening, creating, recreating, and discussing music, which encouraged teamwork and shared emotional expression. Group singing and improvisation with instruments built a sense of belonging and community, creating a supportive environment where individuals connected through shared experiences. These interactions not only gave Pedro the opportunity to practice verbal and nonverbal communication, but also strengthened social bonds, reduced feelings of loneliness, and fostered a sense of community and mutual support (Silverman, 2022).

Improve Expressive Language

The music therapist used musical speech stimulation (MUSTIM) and melodic intonation therapy (MIT) to address Pedro's expressive aphasia. Musical speech stimulation is a NMT technique used to facilitate functional language and expressive communication by triggering automatic speech through overlearned songs, rhymes, and chants (Thaut, 2014; Thaut et. al, 2014). The therapist sang a familiar song, leaving out word(s) at the end of a phrase. For example, the

Reflecting on song lyrics or making music together creates spaces where caregivers and caretakers exist outside their responsibilities, allowing them to participate equally in music and temporarily set aside challenges.

music therapist sang, "Happy birthday to _____" prompting Pedro to fill in the rest of the line and sing "you." The protocol facilitated the initiation of spontaneous speech and Pedro was able to fill in longer and longer song phrases and lyrics over time.

MIT is a technique used to aid speech recovery for aphasia (Thaut et al., 2014). The therapist composed a musical phrase that mimicked a short functional speech phrase. For example, "How are you?" The melodic and rhythmic composition was closely related to normal inflection and speech prosody of the phrase. The therapist taught the hummed melodic phrase (without words) with hand tapping to cue rhythm and pacing. Once humming the melody was mastered, words were added to the melodic phrase. The therapist and Pedro sang the phrase together repeatedly until he mastered it again. Then the therapist faded the musical elements, leaving Pedro with speech-singing vocalization and eventually speech.

Mental Health Settings

Emma, a college student, recently experienced multiple deaths in her family and a traumatic event at school. These events profoundly impacted her mental health and behavior. Emma has become increasingly isolated both at home and at school, withdrawing from social interactions and losing interest in activities she once enjoyed, such as playing the guitar and participating in sports. She has also shown a significant decline in academic performance and has been experiencing frequent panic attacks, nightmares, and feelings of hopelessness.

Emma's professors referred her to the university's student services, and her case manager recommended music therapy as part of their treatment plan after recognizing the severity of her symptoms. The primary goals for therapy were to help Emma process grief, cope with trauma, develop effective coping mechanisms, decrease anxiety, increase social connection, and improve self-advocacy and emotional expression.

Emma's Treatment Plan

The case manager included music therapy in Emma's treatment plan, with both individual and group sessions designed to address her emotional and psychological needs as a college student coping with depression and anxiety after a traumatic event.

In individual sessions, the music therapist created a safe space for Emma to process her grief while reducing emotional distress. Additionally, Emma learned specific coping skills to improve her emotional regulation and feelings of depression and anxiety. She also built confidence through self-advocacy and communication. The music therapist guided Emma in developing a life reflection playlist with songs that resonated with her experiences, and songwriting provided a creative outlet for emotional expression. As Emma progressed, she worked with the music therapist to practice specific coping skills that supported her return to classes and responsibilities. For instance, she learned when and how to use music-assisted breathing exercises; identified specific songs to assist with grounding; and developed journaling and sleep relaxation playlists.

Group sessions centered on social connections and shared understanding among participants. Activities included collaborative songwriting, lyric analysis, and group improvisation, allowing participants to express their emotions, share personal stories, and build empathy. Recreative music therapy used familiar songs to help participants feel a sense of belonging and support, fostering a stronger sense of community and reducing feelings of isolation.

Summary

Music therapy is an allied health profession that uses music interventions to achieve therapeutic goals tailored to individual needs. These interventions, which include listening to, creating, singing, or discussing music, address a wide variety of needs. The inclusion of music therapists within interdisciplinary teams offers numerous benefits, such as supporting common healthcare goals, reducing patient isolation, and improving patient satisfaction. It also provides emotional support, respects cultural and individual preferences, and involves the patient in personalizing their care–all tenants of patient-centered care.

Music therapy outcomes span physical, cognitive, communication, and socioemotional domains, benefiting individuals of all ages without requiring prior musical experience. Music therapists address complex needs through collaboration, especially when traditional treatments are ineffective

or nonpharmacological interventions are needed. Music is familiar and comfortable, making it a nonthreatening medium. It also facilitates active engagement in the therapeutic process, allowing for unique outcomes. While both case vignettes are tailored to specific settings, the principles and interventions of music therapy are highly adaptable and transferable to a wide range of environments.

In collaborative settings, the music therapist offers a unique perspective, combining their clinical expertise with an in-depth understanding of how to use music as a therapeutic tool to achieve the patient's clinical goals. As the music therapist becomes more integrated into the team, the value of their training and contributions becomes clearer to other team members. The role of the music therapist in collaboration can vary depending on the setting, the client's needs, and the specifics of each case. CE2

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Enhancing Liver Transplant Success: The Crucial Role of Case Management in Patient Care, Part 1

By Janet Coulter, MSN, MS, RN, CCM, FCM; Anila Momin, MSN, MBA, RN; Lauren Thomas, MSN, RN, CCM; and Amanda Ward, BSN, RN

Introduction

A liver transplant is a life-saving procedure, offering a significant improvement in both the quality of life and survival of patients with severe liver disease. As of September 2024, there were 9,924 individuals in the US awaiting a liver transplant, according to the Organ Procurement and Transplantation Network (OPTN) (OPTN, Data reports, n.d.). In 2023, the United Network for Organ Sharing (UNOS) reported a record-breaking 10,660 liver transplants, the highest number ever performed in a single year (Terrault, N. A., et al, 2023; UNOS, 2004). This growing number of liver transplants underscores the increasing need for comprehensive case management.

Functions of The Liver

The liver is an essential solid organ that resides under the rib cage in the right upper abdomen. It provides numerous vital functions, such as removing waste products and foreign substances from the bloodstream. The liver breaks down poisonous substances such as drugs and alcohol, assists in regulating blood sugar, and manufactures necessary nutrients. The liver also produces bile, which aids in digestion and fat absorption, and controls blood clotting by producing coagulants with the aid of vitamin K. The liver contributes to albumin production, a protein that transports hormones, vitamins, and enzymes throughout the body as well as prevents the leaking of fluids from the bloodstream into tissue areas. It regulates amino acids, which ensures that bloodstream levels are adequate for healthy protein production. Furthermore, the liver helps fight off infection through the removal of bacteria from the bloodstream. It stores large amounts of vitamins A, D, E, K, and B12 and other minerals such as iron and copper. The liver can also remove excess glucose from the bloodstream, storing it as glycogen that can be changed back to glucose when needed.

Janet S. Coulter, MSN, MS, RN, CCM, FCM, *is a Fellow of Case Management and a board-certified transplant case manager. For the past three years she has been providing case management services for solid organ and blood and marrow transplant patients. She is currently President of the Case Management Society of America National Board of Directors. She has held positions as a nurse educator, administrator, team leader, and Director of Case Management. Janet holds a Master of Science in Nursing from West Virginia University and a Master of Science in Adult Education from Marshall University. Janet has been a recipient of the CMSA National Award of Service Excellence and Southern Ohio Valley CMSA Case Management Leadership award.*

Anila Momin, MSN, MBA, RN*, is a transplant case manager. For the past 6 years she has been working for a large insurance company providing and coordinating care for solid organ and blood and marrow transplant. Her prior 18 years of nursing experience includes adult critical care, telemetry, medical surgical, emergency department, and LTAC nursing. Anila holds a dual Master of Science in Nursing and Master's in Business Administration with focus in healthcare administration.*

Lauren Thomas, MSN, RN, CCM*, has spent her entire nursing career caring for transplant patients. After graduating with a degree in English and Creative Writing, she earned a BS in Nursing. She began her career caring for pre- and post-kidney and liver transplant patients as well as general medicine and surgery patients in New York City. She then moved to Georgia, where she worked in a pediatric cardiac intensive care unit. After earning her Master's in Nursing Education, she became a heart transplant coordinator, educating and working with pre- and post-heart transplant patients throughout the evaluation, listing, surgical, and post-transplant process. She previously earned her CCRN and CCTC certifications. For the past 3 years, she has been a transplant case manager.*

Amanda Ward BSN, RN, *is a transplant nurse case manager. Amanda specialized in hepatology and liver transplant for over 8 years as a transplant coordinator in Texas and Washington state. For the past 4 years she has been working as a nurse case manager specializing in solid organ and blood and marrow transplants, working with patients across the nation to provide support, education, and interdisciplinary coordination to improve outcomes for each patient.*

In 2023, the United Network for Organ Sharing reported a record-breaking 10,660 liver transplants, the highest number ever performed in a single year.

Causes and Pathophysiology of Liver Diseases

Liver disease includes a large variety of conditions that disrupt the functionality of the liver and alter the organ in diverse ways. These include infections, genetic factors, autoimmune disease, environmental exposures, and lifestyle factors. Understanding the different types and how they can increase risk for liver disease is important for early detection and health management. Regardless of the cause of the liver disease, severe complications can develop, including cirrhosis, portal hypertension, liver cancer, and liver failure.

Cirrhosis

Cirrhosis arises from chronic inflammation and scarring, which replaces the healthy liver tissue with nonfunctional scar tissue. Cirrhosis is a progressive disease. Complications from cirrhosis continue the longer a patient has the disease, eventually leading to liver failure and potentially death (NIDDK, n.d.). People are more likely to develop cirrhosis if they have a history of heavy alcohol use, are overweight or obese, have type 2 diabetes, are men, or are over 40 years old (NIDDK, n.d.). Treatment for cirrhosis focuses on mitigating complications and side effects of the disease; the only curative treatment is liver transplant. A patient with cirrhosis can be asymptomatic for many years and may not even know they have cirrhosis until their liver is badly damaged. This is called *compensated cirrhosis* (VA, n.d.). When symptoms and complications arise, it is called *decompensated cirrhosis* (VA, n.d.). When cirrhosis becomes decompensated, doctors may initiate a referral to a liver transplant center (NIDDK, n.d.).

MASH/MASLD

The most common cause of liver disease is nonalcoholic fatty liver disease (NAFLD), now known as *metabolic dysfunction-associated steatotic liver disease (MASLD).* MASLD can range from steatosis, which is fat deposits in the liver, to the more critical nonalcoholic steatohepatitis (NASH), now known as *metabolic dysfunction-associated steatohepatitis (MASH).* This is a leading cause of cirrhosis and hepatocellular carcinoma (HCC).

Patients at higher risk for MASLD are those who are overweight, obese, diabetic, or have high cholesterol or triglycerides, but it can take place without those factors. According to the Cleveland Clinic (2024), up to 25% of adults in this country have MASLD. In addition to poor diet and obesity, MASLD and MASH can also result from rapid weight loss, medical conditions that impact fat storage (for example, polycystic ovarian syndrome), and infections (eg, hepatitis C). Specific medications such as glucocorticoids, synthetic estrogens, amiodarone, methotrexate, and tamoxifen can contribute to the development of MASH (Rivera, 2024, January 18; Terrault, et al., 2023).

MASLD is often connected with metabolic syndrome, a group of conditions associated with a higher risk of heart disease, diabetes, and stroke, and is driven by insulin resistance (AHA,2023). These circumstances lead to lower adiponectin and higher leptin levels, which create an unstable suppression of adipose tissue lipolysis and elevated plasma free fatty acids that collect in the liver as fat. Higher glucagon levels and an imbalanced insulin/glucagon ratio in NAFLD encourage hepatic lipogenesis, glycogenolysis, and gluconeogenesis, declining insulin resistance and enriching hepatic glucose production. Gastrointestinal hormones such as GLP-1 and ghrelin also contribute to the development of NAFLD. Hindered GLP-1 and lower levels of receptors harm the hepatic glucose and lipid metabolism, while a changed ghrelin ratio creates anti-inflammation. The liver also releases hepatokines, such as selenoprotein O, which worsens insulin resistance and oxidative stress. Adipose tissues release adipokines such as leptin and adiponectin, impacting inflammation, the oxidation of fatty acids, and energy expenditure. Myokines such as irisin—which is created by exercise—impact glucose and lipid metabolism (Elwir & Rahimi, 2017).

Hepatitis

Infections of the body cause inflammation in the liver, especially over time. Hepatitis is a virus caused by various strains: hepatitis A, B, C, D, and E. These viruses inflame and damage liver cells. Toxic hepatitis is caused by increased toxins in the bloodstream that can overwhelm the liver's filtering. Acute and chronic hepatitis result from this exposure (Cleveland Clinic, 2024a, May 1).

Acute alcohol-associated hepatitis is inflammation of the liver from chronic heavy alcohol use, which can cause sudden, rapid onset of malaise, jaundice, and pain (Shah et al., 2023). Severe cases have a high 30-day mortality rate of 30% to 50% (Shah et al., 2023).

Acute hepatitis can also occur without a known cause. This can result in acute liver failure.

Memories of a Liver Transplant Caregiver/Case Manager

I did not realize it at the time, but my professional life had been preparing me for this role all along. From passing countless medications on a busy 54-bed medical-surgical unit to advocating for patients as a case manager, every experience helped equip me for my role as Jim's caregiver. But you are never completely prepared.

His diagnosis and journey have been a life-changing experience for our family. Living close to a major medical center with world-class liver transplant specialists is a true blessing. Transplantation is an amazing journey that tests the limits of human strength and courage. It demands unwavering commitment, faith, mental, emotional, and physical endurance—and above all, resilience.

Plan A was to keep Jim as healthy as possible; Plan B was a liver transplant. Even though we followed every direction from the physicians and took all the medications as prescribed, Jim's health was steadily deteriorating. He lost weight and suffered more frequent episodes of hepatic encephalopathy. He grew weaker, struggled with comprehension, and faced significant memory issues. There were countless midnight trips to the ED. My knowledge of medications expanded exponentially, and I could recite Jim's entire medication list—brand names, generics, usage, dosage, frequency, and side effects. That list seemed endless and was ever-changing. Then came the stress and uncertainty of waiting for "the call"—waiting for the miracle that would give our family a new lease on life, knowing that it would come at the expense of another family's tragedy.

Would it happen? Would he get the call? Would the transplant be successful? Would we experience survivor's guilt?

On April 27, 2018, our wish was granted—6 years ago. I often think about how far Jim has come and how blessed we are with his good health, a loving family, and loyal friends. We are so grateful for the sweet and caring friends we have, even those who live miles away. We appreciate their generosity, support, and friendship. We are thankful for everyone who helped, from transporting Jim to doctor appointments to bringing meals, sending cards, making calls, and offering best wishes.

We feel immensely blessed and grateful for the skilled surgeons, nurses, transplant coordinators, social workers, pharmacists, dietitians, and support staff at the University of Cincinnati Medical Center. Their compassion, care, and dedication are unmatched. Above all, we are thankful to God and eternally grateful to the donor and their family. They gave us a life-saving gift that transformed our lives. Our lives are full of blessings.

Life did not go as we planned. God had other plans for Jim and me. We have always enjoyed life, but now the world seems greener, the sun brighter, and the air fresher. We are trying to live each day to the fullest, cherishing every moment as a gift. Yes, there have been challenges, but I choose not to dwell on them. Some days are better than others, but this is a new chance at life—a second chance. This experience has changed the course of our lives. It has changed how we think and feel. We find joy in the small things: watching TV together, eating dinner together, talking with family and friends on the phone. Family and friends mean more to us now. We strive to create traditions and memories that bring us happiness. Every day, I am thankful for this gift from God.

When I reflect on Jim's journey, I am reminded of how blessed he has been. This has been an extraordinary journey for our family and friends as well. Everyone contributed their strengths and talents to make this journey a success. Jim is my greatest adventure, and this has truly been the adventure of a lifetime.

I feel blessed to be able to use our experiences to assist and guide other potential transplant recipients through their own journeys, as I am now a transplant case manager.

To all the patients and families waiting for a transplant: *I wish you health, happiness, and the strength to keep going. Receiving a transplant is one of life's greatest challenges, and the reward is life itself.*

To the donor family: *We will never forget your final act of giving. We hope to be fortunate enough to meet you someday and thank you in person.*

If I could ask one favor of all who read this: please make sure you are registered to be a donor. Be heroic. Give the ultimate gift of life. It will bless you as well.

Genetic Factors

Genetic factors are a major factor in liver disease. Several of these conditions, such as hemochromatosis, Wilson's disease, and alpha-1 antitrypsin deficiency, cause a buildup of substances in the liver that cause damage. Another genetic condition is primary biliary cholangitis (PBC), which destroys bile ducts found in the liver, resulting in inflammation and scarring. Primary sclerosing cholangitis (PSC) is a disease that impacts bile ducts over time, creating a need for a liver transplant (Rivera, 2024, August 13; ALF, n.d.).

Environmental/Lifestyle Factors

Environmental and lifestyle choices can impact the severity of liver disease. Excess consumption of alcohol can lead to cirrhosis and alcoholic hepatitis. A lifestyle of obesity and poor diet can lead to MASLD. Even some medications and herbal supplements can increase the chances of liver problems, specifically when taken unsupervised or in abundance. Finally, toxic chemicals can cause harm to the liver, emphasizing the importance of environmental health and safety (Mayo Clinic, 2024, February 13).

Signs, Symptoms, and Treatments for Liver Disease

Common symptoms of decompensated cirrhosis or other liver diseases include jaundice, hepatic encephalopathy, fluid overload, peripheral edema, ascites, and esophageal or gastric varices that can cause gastrointestinal bleeding and portal hypertension (NIDDK, n.d.).

Jaundice

One of the earliest and noticeable signs of liver disease is jaundice or yellowing of the skin. If it occurs in the whites of the eyes, it is known as scleral icterus. Jaundice is a symptom of damaged bilirubin excretion, which is commonly seen with liver dysfunction. When red blood cells are towards the end of their 120-day lifespan or are impaired, the membranes rupture, releasing hemoglobin into the bloodstream. Macrophages phagocytize the hemoglobin, which divides it into heme and globin components. While the globin component breaks down into amino acids, the heme oxidizes by the enzyme oxygenase, producing biliverdin, iron, and carbon monoxide. Biliverdin, a green pigment, is lessened by biliverdin reductase to form bilirubin, which is a yellow pigment. A large portion of bilirubin is obtained from the breakdown of heme in expired blood cells, whereas smaller portions are coming from other heme-containing proteins. Unconjugated (indirect) bilirubin, which is insoluble in water, is connected to albumin and transferred to the liver. Within the liver, bilirubin is conjugated with glucuronic acid by the enzyme UDP-glucuronyl transferase to create conjugated (direct) bilirubin that is soluble in water and can be excreted. The conjugated bilirubin is discharged into the biliary tree and cystic ducts as part of bile. In the intestine, bacteria can change bilirubin into urobilinogen, which can be converted into stercobilinogen and released in feces or reabsorbed into the bloodstream and emitted by the kidneys in urine (Mandal, 2023).

Hepatic Encephalopathy

Hepatic encephalopathy (HE) is caused by the build-up of ammonia in the blood that cannot be filtered out by the scarred liver. It can cause acute confusion and other neuropsychiatric symptoms (Sharma & Nagalli, 2023). HE involves an intricate pathophysiology including multiple elements, such as ammonia (NH3), inflammatory cytokines, manganese deposition in the basal ganglia, and benzodiazepine-like compounds such as gamma-aminobutyric acid (GABA). Recent studies also have shown the roles of gut microbiota and aromatic amino acids within the disease. Even though the exact mechanisms underlying HE are not fully comprehended, ammonia is accepted as a key contributor to pathogenesis. In cirrhosis, the harmed urea cycle function and reduced liver glutamine synthetase activity cause high circulating ammonia levels. Once ammonia crosses the blood-brain barrier, it causes astrocyte swelling and contributes to neurological damage within HE.

Numerous organs create ammonia, which can enter the brain and create harmful effects. For example, in the liver, ammonia tends to combine with glutamate (GLU) to create glutamine (GLN) through the process of enzyme glutamine synthesase (GS). Agents such as ornithine phenylacetate and glycerol phenylbutyrate reduce ammonia levels by synthesizing GLN with phenylacetate (PAA) to form phenylacetylglutamine (PAGN), which is released in the urine. Additional treatments, such as AST-120, a carbon microsphere adsorbent, attach ammonia in the gut to lower the levels of circulation, while polyethylene glycol (PEG) amplifies the clearance of ammonia-producing gut bacteria through fecal excretion. Additionally, nearly a quarter of urea by-products are moved to the colon, where bacteria create ammonia that enters the portal circulation.

Lactulose is a liquid medication that works by binding the extra ammonia in the body to the stool so it may be excreted, preventing encephalopathy (VA, n.d.). Rifaximin is a twice-a-day antibiotic that is often used to assist lactulose in this process (VA, n.d.).

Fluid Overload

Fluid overload is common in cirrhotic patients because excess fluid can build up when the scarred liver cannot filter and remove it quickly enough (NIDDK, n.d.) When the fluid accumulates in the abdominal cavity, it is known as ascites. Diuretics like spironolactone and furosemide are often used to reduce fluid overload and prevent this complication (VA, n.d.). If ascites builds up too quickly and cannot be managed by diuretics alone, patients must have paracentesis (draining of the ascites) on a routine basis. With more frequent paracenteses, the risk of infection, including spontaneous bacterial peritonitis (SBP), can increase (Sharma & Nagalli, 2023). Some patients are placed on prophylactic antibiotics if they are at risk for or have had SBP in the past.

Portal Hypertension

Portal hypertension is a buildup of pressure in the portal veins of the esophagus connected to the liver (Sharma & Nagalli, 2023). Portal hypertension occurs when scar tissue compresses portal veins, which leads other veins in the abdomen and esophagus to expand and rupture. These are known as *esophageal or gastric varices,* and if these vessels rupture, internal bleeding will occur. To reduce or slow down the effects of portal hypertension, some patients are placed on beta-blockers to reduce the blood pressure in the portal veins (VA, n.d.). Due to increased risk of esophageal and gastric varices, patients with liver disease often require regular endoscopies and colonoscopies to monitor for variceal

Liver disease includes a large variety of conditions that disrupt the functionality of the liver and alter the organ in diverse ways. These include infections, genetic factors, autoimmune disease, environmental exposures, and lifestyle factors.

development and to stop any active or potential bleeding with cauterization or banding of the varices (NIDKK, n.d.).

Transjugular intrahepatic portosystemic shunt (TIPS procedure) is used in patients with severe portal hypertension. This procedure is done by interventional radiologists with surgical catheters and under x-ray and involves the creation of a stent between the portal vein and hepatic veins (Mount Sinai, Transjugular, n.d.). This stent lessens the pressure built on the portal veins and reduces the complications of portal hypertension. However, in patients with hepatic encephalopathy, this procedure should be used with caution, as it can cause worsening of these symptoms due to the stent allowing the extra ammonia to bypass the liver completely (Sharma & Nagalli, 2023). Those with heart failure should not undergo this procedure because it can increase the amount of blood returning to the heart putting such patients at risk for a rapid decline in their heart failure (Mount Sinai, Transjugular, n.d.).

Hepatocellular Cancer

The most common type of liver cancer is hepatocellular cancer (HCC), the third leading cause of cancer deaths worldwide (Ben-Ari, 2022). Patients with cirrhosis and chronic hepatitis are at higher risk for developing HCC (NIDDK, n.d.). Over half of liver cancer cases are connected to chronic hepatitis B or C (Cleveland Clinic, 2024a, May 1). For patients with cirrhosis, additional routine imaging, such as ultrasound, CT scan, and MRI, is performed every 6 months to monitor for development of tumors (NIDDK, n.d.). Sometimes, liver transplant is the only hope for cure in some patients with HCC: treatment with liver transplant can increase their 10-year survival to more than 50% (Ben-Ari, 2022). Post-transplant recurrence is less than 15% (Asafo-Agyei & Samant, 2023).

Patients with HCC have several options for treatment while waiting for a transplant. Patients with very-early- or early-stage HCC who do not meet surgical resection criteria usually undergo ablation through radiofrequency ablation, cryotherapy, microwave, or laser therapy or injection of chemical substances (Asafo-Agyei & Samant, 2023). Intermediate-stage HCC patients often undergo transarterial chemoembolization (TACE), which infuses cytotoxic agents and embolizes the feeding artery to the tumor (Asafo-Agyei & Samant, 2023). Radioisotope yttrium-90 (Y-90) is a selective internal radiation therapy that infuses Y-90 microspheres into the blood vessels that supply the tumor, blocking the supply of blood to the cancer cells and delivering high-dose radiation to the tumor (Asafo-Agyei & Samant, 2023). Patients with advanced stage HCC are considered for systemic chemotherapy treatment. Nexavar, lenvatinib, and regorafenib are frequently used antineoplastic medications for these patients (Asafo-Agyei & Samant, 2023).

Indications for Liver Transplant

The liver is one of the only organs that can replace damaged tissue with new cells (VA, n.d.). However, sometimes the damage is too extensive. In these cases, irreversible liver damage can only be treated through a liver transplant. The National Institute for Diabetes and Digestive and Kidney Diseases reports that the most common reasons for needing a liver transplant in 2023 were (NIDDK, n.d.):

- Alcohol-associated cirrhosis
- Fatty liver cirrhosis
- Acute alcohol-associated hepatitis
- Hepatitis C-associated cirrhosis
- Cancers that start in the liver combined with cirrhosis

Liver Transplant Evaluation

Once referred to a transplant center, the patient can begin the transplant evaluation process. Each center's evaluation process differs slightly depending on the center's criteria (UNOS, 2024, March 20). However, most centers have the patient first start with an education class with a registered nurse transplant coordinator at their center. The nurse transplant coordinator can be responsible for arranging the evaluation, treatments, and follow-up care, and providing education to the patient and their support person(s) on what to expect before, during, and after transplant (OPTN, n.d.). Once this education is completed, the patient will have consults with the transplant physician/hepatologist, transplant surgeon, and members of the multidisciplinary transplant team, including social workers, dieticians, pharmacists, and financial coordinators (OPTN, n.d.). This may occur all in one day or over several days depending on the center's scheduling availabilities, patient's health status, and distance from the center. The patient may also have testing done

The most common cause of liver disease is nonalcoholic fatty liver disease (NAFLD), now known as *metabolic dysfunction-associated steatotic liver disease* (MASLD).

that day, including full lab panels to check for multisystem organ function, infectious disease and immunity status, and specialized blood typing. Diagnostic testing includes a chest x-ray, ECG, echocardiogram, stress test, and CT abdomen and pelvis (Rivera, 2024, August 13). Based on the center's criteria and the member's comorbidities, additional testing may be needed.

Once the initial evaluation is completed, the multidisciplinary transplant team will meet to review the testing (Rivera, 2024, August 13). The transplant committee consists of the variety of providers the patient saw during their evaluation, including physicians, nurses, and other specialists (UNOS, 2024, March 20). The patient's case is reviewed, and they are considered for the waiting list. Many times, additional testing or requirements are needed for the patient to be listed, depending on what is found during their initial evaluation or health history. For instance, someone with a history of colon cancer may need an updated colonoscopy and clearance from their oncologist. In another example, some transplant centers or health plans may require dental clearance to ensure there are no active dental issues that could cause infection in the post-transplant period.

Having a stable and reliable caregiver is essential for every patient undergoing transplant, and confirmation of support is frequently a requirement of transplant centers (UNOS, 2024, July 30). The reason for this is to ensure the success of the patient post-transplant. Patients who suffer from hepatic encephalopathy, in particular, require assistance pre-transplant with managing medications, safe ambulation, and understanding the transplant process, risks and benefits. While recovering from the major abdominal surgery, these needs only intensify, as for the first 3 to 6 months post-transplant, the patient will be recovering from their procedure. They will not be able to perform personal care independently, and will not be able to drive (UNOS, 2024, March 20). In addition, the patient will have appointments at transplant clinic several times a week in the first and second months post-transplant. During this period, there are frequent alterations to the patient's medication regimen and immunosuppression, which, if not followed precisely, can cause complications (UNOS, 2024, March 20). The first 3 to 6 months post-transplant are when side effects of the new medications and immunosuppression are most significantly felt by the patient, which can affect their self-care ability (UNOS, 2024, March 20). Patients will have a large wound that they may need assistance with dressing and caring for at home or that may cause limitations in their own ability to care for themselves or participate in their own activities of daily living (UNOS, 2024, March 20). It is not uncommon for a patient to be declined for listing if they do not have an adequate caregiver plan in place.

Determining Placement on the Transplant List

Once approved by the transplant center for listing, the patient will be placed on the national liver transplant waiting list. Their placement is determined by their Model for End-stage Liver Disease (MELD) score and is specific for liver transplant patients. This score is a mortality indicator that estimates the severity of end-stage liver disease (OPTN, 2024). Using the lab values of sodium, total bilirubin, albumin, creatinine, and international normalized ratio, the MELD calculator estimates the 3- month mortality risk in patients with liver disease. The score ranges from 6 (2.4% risk of 3-month mortality) to 40 (92.67% risk of 3-month mortality) (OPTN, 2024). This score is also used to determine allocation of organs by UNOS, which is the private, nonprofit organization that manages the nation's organ transplant system and transplant lists under contract with the federal government (UNOS, 2024, July 30; UNOS, 2023a, August 1). Patients with the highest MELD scores get top priority on the transplant list for organ distribution. For pediatric patients younger than 12, the PELD score (Pediatric End-Stage Liver Disease), which has similar criteria as the MELD, is used. (UNOS, 2023a, August 1).

Some transplant candidates have medical conditions in which their MELD score will not accurately predict their transplant need (UNOS, 2023b). This usually occurs in patients with HCC, whose labs may be stable despite high mortality and recurrence risk of the cancer. In these cases, an exception score can be granted by UNOS, raising their status on the transplant list and making access to transplant more equitable among patients with similar levels of medical urgency (UNOS, 2023b, August 1).

Sometimes MELD is bypassed altogether, and some patients with severe medical conditions highly likely to lead to death are listed as either Status 1A or Status 1B category to receive the highest priority for matching organs (UNOS, 2023a, August 1). Status 1A patients are expected to live less

than 7 days without a transplant and must meet specific criteria outlined in the OPTN policy to qualify for this condition (UNOS, 2023a, August 1)). Status 1B patients are all younger than 18 years of age, or were younger than 18 when listed for transplant, and must meet specific OPTN criteria or have a very high MELD or PELD score with severe complications (UNOS, 2023a, August 1). CE 3

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PharmaFacts for Case Managers

BIZENGRI (zenocutuzumab-zbco) injection, for intravenous use

WARNING: EMBRYO-FETAL TOXICITY

Embryo-Fetal Toxicity: Exposure to BIZENGRI during pregnancy can cause embryo-fetal harm. Advise patients of this risk and the need for effective contraception.

INDICATIONS AND USAGE

Advanced Unresectable or Metastatic NRG1 Fusion-Positive Non-Small Cell Lung Cancer

BIZENGRI is indicated for the treatment of adults with advanced unresectable or metastatic non-small cell lung cancer (NSCLC) harboring a neuregulin 1 (NRG1) gene fusion with disease progression on or after prior systemic therapy.

This indication is approved under accelerated approval based on overall response rate and duration of response . Continued approval for this indication may be contingent upon verification and description of clinical benefit in a confirmatory trial(s).

Advanced Unresectable or Metastatic NRG1 Fusion-Positive Pancreatic Adenocarcinoma

BIZENGRI is indicated for the treatment of adults with advanced unresectable or metastatic pancreatic adenocarcinoma harboring a neuregulin 1 (NRG1) gene fusion with disease progression on or after prior systemic therapy.

This indication is approved under accelerated approval based on overall response rate and duration of response Continued approval for this indication may be contingent upon verification and description of clinical benefit in a confirmatory trial(s).

DOSAGE AND ADMINISTRATION

Patient Selection

Select patients for treatment with BIZENGRI based on the presence of an NRG1 gene fusion in tumor specimens.

An FDA-approved test for the detection of NRG1 gene fusions is not currently available.

1. Recommended Evaluation Before Initiating BIZENGRI

Before initiating BIZENGRI, evaluate left ventricular ejection fraction (LVEF) [see Warnings and Precautions (5.3)].

2. Recommended Dosage

The recommended dosage of BIZENGRI is 750 mg as an intravenous (IV) infusion every 2 weeks until disease progression or unacceptable toxicity.

Administer premedications before each BIZENGRI infusion as recommended to reduce the risk of infusion-related reactions .

3. Recommended Premedications

Prior to each infusion of BIZENGRI, administer premedications to reduce the risk of infusion-related reactions (IRRs).

TABLE 1 PREMEDICATIONS PRIOR TO BIZENGRI INFUSIONS

Medication	Dose	Route of Administration
Corticosteroid[1]	Dexamethasone (10 mg)	Oral or intravenous
Antipyretic	Acetaminophen (1,000 mg)	Oral or intravenous
H1 Antihistamine	Dexchlorpheniramine (5 mg) or other anti-H1 equivalent	Intravenous or oral

Dosage Modifications for Adverse Reactions

No dose reduction is recommended for BIZENGRI. The recommended dosage modifications of BIZENGRI for adverse reactions are provided in Table 2.

DOSAGE FORMS AND STRENGTHS

Injection: 375 mg/18.75 mL (20 mg/mL) clear to slightly opalescent, colorless to slightly yellow solution in a single-dose vial.

CONTRAINDICATIONS

None.

WARNINGS AND PRECAUTIONS

Infusion-Related Reactions/Hypersensitivity/Anaphylactic Reactions

BIZENGRI can cause serious and life-threatening infusion-related reactions (IRRs), hypersensitivity and anaphylactic reactions. Signs and symptoms of IRR may include chills, nausea, fever, and cough.

In the eNRGy study, 13% of patients experienced IRRs, all were Grade 1 or 2; 91% occurred during the first infusion. The median time to onset was 63 minutes (range: 13 minutes to 240 minutes) from the start of infusion.

Administer BIZENGRI in a setting with emergency resusci-

TABLE 2 RECOMMENDED DOSAGE MODIFICATIONS FOR ADVERSE REACTIONS

Adverse Reaction	Severity	Dose Modifications and Management
Infusion-related reactions (IRRs)/ Hypersensitivity/ Anaphylactic Reactions *[see Warnings and Precautions (5.1)]*	≤ Grade 3 IRR	• Interrupt BIZENGRI infusion if IRR is suspected and monitor patient until reaction symptoms resolve. • Provide symptomatic treatment as needed. • Resume the infusion at 50% of the infusion rate at which the reaction occurred. The infusion rate may be escalated if there are no additional symptoms. • Corticosteroid premedication can be used as necessary for subsequent BIZENGRI infusions *[see Recommended Premedications (2.4)].*
	Grade 4 IRR or any grade hypersensitivity/ anaphylactic reaction	• Permanently discontinue BIZENGRI.
Interstitial Lung Disease (ILD)/ Pneumonitis *[see Warnings and Precautions (5.2)]*	Grade 1	• Interrupt BIZENGRI until recovery. • Consider prompt initiation of corticosteroids when the diagnosis is suspected. • Resume treatment after resolution.
	≥ Grade 2	• Permanently discontinue BIZENGRI. • Promptly treat with corticosteroids.
Left Ventricular Dysfunction *[see Warnings and Precautions (5.3)]*	LVEF is 45-49% and absolute decrease from baseline ≥10% or LVEF less than 45%	• Interrupt BIZENGRI. • Repeat LVEF assessment within 3 weeks. • If LVEF is less than 45% or LVEF has not recovered to within 10% from baseline, permanently discontinue BIZENGRI. • If LVEF is 50% or greater or LVEF is 45-49% and recovered to within 10% of baseline, resume BIZENGRI and monitor LVEF every 12 weeks while on treatment and as clinically indicated.
	Symptomatic congestive heart failure (CHF)	• Permanently discontinue BIZENGRI.
Other Clinically Relevant Adverse Reactions *[see Adverse Reactions (6.1)]*	Grade 3 or 4	• Withhold BIZENGRI until recovery to ≤ Grade 1 or baseline. • Provide symptomatic treatment as needed. • Resume treatment after resolution of symptoms.

tation equipment and staff who are trained to monitor for IRRs and to administer emergency medications. Monitor patients closely for signs and symptoms of infusion reactions during infusion and for at least 1 hour following completion of first BIZENGRI infusion and as clinically indicated. Prior to the first BIZENGRI infusion, premedicate with a corticosteroid, an H1 antihistamine and acetaminophen to reduce the risk of IRRs . Corticosteroid premedication can be used as necessary for subsequent BIZENGRI infusions.

Interrupt BIZENGRI infusion in patients with ≤ Grade 3 IRRs and administer symptomatic treatment as needed. Resume infusion at a reduced rate after resolution of symptoms [see Dosage and Administration (2.5)]. Immediately stop the infusion and permanently discontinue BIZENGRI for Grade 4 or life-threatening IRR or hypersensitivity/anaphylaxis reactions.

Interstitial Lung Disease/Pneumonitis

BIZENGRI can cause serious and life-threatening interstitial lung disease (ILD)/pneumonitis.

In the eNRGy study [see Adverse Reactions (6.1)], ILD/pneumonitis occurred in 2 (1.1%) patients treated with BIZENGRI. Grade 2 ILD/pneumonitis (Grade 2) resulting in permanent discontinuation of BIZENGRI occurred in 1 (0.6%) patient.

Monitor for new or worsening pulmonary symptoms indicative of ILD/pneumonitis (e.g., dyspnea, cough, fever). Immediately withhold BIZENGRI in patients with suspected ILD/pneumonitis and administer corticosteroids as clinically indicated. Permanently discontinue BIZENGRI if ILD/pneumonitis ≥ Grade 2 is confirmed.

Left Ventricular Dysfunction

BIZENGRI can cause left ventricular dysfunction.

Left ventricular ejection fraction (LVEF) decrease occurred with anti-HER2 therapies, including BIZENGRI. Treatment with BIZENGRI has not been studied in patients with a history of clinically significant cardiac disease or LVEF less than 50% prior to initiation of treatment.

In the eNRGy study [see Adverse Reactions (6.1)], Grade 2 LVEF decrease [Grade 2 LVEF decrease (40%-50%; 10 - 19% drop from baseline)] occurred in 2% of evaluable patients. Cardiac failure without LVEF decrease occurred in 1.7% of patients including 1 (0.6%) fatal event.

Before initiating BIZENGRI, evaluate LVEF and monitor at regular intervals during treatment as clinically indicated. For LVEF of less than 45% or less than 50% with absolute decrease from baseline of 10% or greater is confirmed, permanently discontinue BIZENGRI. Permanently discontinue BIZENGRI in patients with symptomatic congestive heart failure (CHF).

Embryo-Fetal Toxicity

Based on its mechanism of action, BIZENGRI can cause fetal harm when administered to a pregnant woman. In literature reports, use of a HER2-directed antibody during pregnancy resulted in cases of oligohydramnios manifesting as fatal pulmonary hypoplasia, skeletal abnormalities, and neonatal death. Animal studies have demonstrated that inhibition of HER2 and/or HER3 results in impaired embryo-fetal development, including effects on cardiac, vascular and neuronal development, and embryolethality. Advise patients of the potential risk to a fetus. Verify the pregnancy status of females of reproductive potential prior to the initiation of BIZENGRI. Advise females of reproductive potential to use effective contraception during treatment with BIZENGRI and for 2 months after the last dose .

ADVERSE REACTIONS

The followingare clinically significant adverse reactions:.
Infusion-Related Reactions/Hypersensitivity/Anaphylaxis

- Interstitial Lung Disease/Pneumonitis
- Left Ventricular Dysfunction
- Embryo-Fetal Toxicity

USE IN SPECIFIC POPULATIONS

Pregnancy

Risk Summary

Based on its mechanism of action, BIZENGRI can cause fetal harm when administered to a pregnant woman [see Clinical Pharmacology (12.1)]. There are no available data on the use of BIZENGRI in pregnant women to inform a drug-associated risk. Animal studies have demonstrated that HER2 and/or HER3 deficiency results in embryo-fetal malformation, including effects on cardiac, vascular and neuronal development, and embryolethality (see Data).

Human IgG1 is known to cross the placenta; therefore, BIZENGRI has the potential to be transmitted from the mother to the developing fetus. Advise patients of the potential risk to a fetus.

There are clinical considerations if BIZENGRI is used in pregnant women, or if a patient becomes pregnant within 2 months after the last dose of BIZENGRI (see Clinical Considerations).

In the U.S. general population, the estimated background risk of major birth defects and miscarriage in clinically recognized pregnancies is 2% to 4% and 15% to 20%, respectively.

Clinical Considerations

Fetal/Neonatal Adverse Reactions

Monitor women who received BIZENGRI during pregnancy or within 2 months prior to conception for oligohydramnios. If oligohydramnios occurs, perform fetal testing that is appropriate for gestational age and consistent with community standards of care.

Data

Human Data

There are no available data on the use of BIZENGRI in pregnant women. In literature reports in pregnant women receiving a HER2-directed antibody, cases of oligohydramnios manifesting as fatal pulmonary hypoplasia, skeletal abnormalities, and neonatal death have been reported. These case reports described oligohydramnios in pregnant women who received HER2-directed antibody alone or in combination with chemotherapy. In some case reports, amniotic fluid index increased after use of a HER2-directed antibody was stopped.

Animal Data

There were no animal reproductive or developmental toxicity studies conducted with zenocutuzumab-zbco. A literature-based assessment of the effects on reproduction demonstrated that HER2 and HER3 are critically important in embryo-fetal development. HER2 knockout mice or mice expressing catalytically inactive HER2 die at mid-gestation due to cardiac dysfunction. HER2 knockout mice have also shown abnormal sympathetic nervous system development. In HER3-deficient mice, embryolethality occurred on embryonic day 13.5 due to cardiac and vascular defects, as well as abnormalities in other organs (neural crest, pancreas, stomach, and adrenal). In addition, HER3 is shown to be involved in mammary gland ductal morphogenesis in mice. Zenocutuzumab-zbco can cause embryo-fetal toxicity based on its mechanism of action.

Lactation

Risk Summary

There are no data on the presence of zenocutuzumab-zbco in human milk, the effects on the breastfed child, or the effects on milk production. Maternal IgG1 is known to be present in human milk. The effects of local gastrointestinal exposure and limited systemic exposure in the breastfed child to BIZENGRI

are unknown. Consider the developmental and health benefits of breast feeding along with the mother's clinical need for BIZENGRI treatment and any potential adverse effects on the breastfed child from BIZENGRI or from the underlying maternal condition. This consideration should also take into account the elimination half-life of zenocutuzumab-zbco and washout period of 2 months.

Females and Males of Reproductive Potential

BIZENGRI can cause fetal harm when administered to a pregnant woman

Pregnancy Testing

Verify the pregnancy status of females of reproductive potential prior to initiating BIZENGRI

Contraception

Females

Advise female patients of reproductive potential to use effective contraception during treatment with BIZENGRI and for 2 months after the last dose.

Pediatric Use

The safety and effectiveness of BIZENGRI have not been established in pediatric patients.

Geriatric Use

Of the 175 patients with NRG1 gene fusion positive tumors in the eNRGy study treated with BIZENGRI at 750 mg every 2 weeks, 75 patients (43%) were 65 years of age or older and 26 patients (15%) were 75 years of age and older. No clinically important differences in safety or efficacy were observed between patients who were ≥65 years of age and younger patients.

CLINICAL STUDIES

Advanced Unresectable or Metastatic NRG1 Fusion-Positive Non-Small Cell Lung Cancer

The efficacy of BIZENGRI was evaluated in the eNRGy study (NCT02912949) a multicenter, open-label, multi-cohort clinical study. The study enrolled adult patients with advanced or metastatic NRG1 fusion-positive NSCLC who had disease progression following standard of care treatment for their disease. Identification of positive NRG1 gene fusion status was prospectively determined based on next generation sequencing (NGS) assays performed at local laboratories or central laboratories. Patients received BIZENGRI as an intravenous infusion, 750 mg every 2 weeks, until unacceptable toxicity or disease progression. Tumor assessments were performed every 8 weeks. The major efficacy outcome measures were confirmed overall response rate (ORR) and duration of response (DOR) as determined by blinded independent central review (BICR) according to Response Evaluation Criteria in Solid Tumors (RECIST v1.1). Efficacy was evaluated in 64 patients with NRG1 fusion-positive NSCLC previously treated with systemic therapy enrolled in eNRGy.

The trial population characteristics were: median age 63.5 years (range: 32 to 86) with 10% of patients ≥ 65 years of age; 64% female; 56% Asian, 33% White, 3.4% Black or African American, and 11% other races or not reported; none were Hispanic or Latino; baseline ECOG performance status of 0 or 1 (97%) or 2 (3%) and 98% of patients had metastatic disease. Patients received a median of 2 prior systemic therapies (range 1 to 6); 95% had prior platinum chemotherapy and 64% had prior anti-PD-1/PD-L1 therapy. A total of 54 patients (84%) had an NRG1 gene fusion detected by RNA-based NGS that may include DNA sequencing and 9 (14%) had an NRG1 gene fusion detected by DNA-based NGS.

Efficacy results are summarized in Table 3

TABLE 3 EFFICACY RESULTS FOR ADVANCED UNRESECTABLE OR METASTATIC NRG1 FUSION-POSITIVE NSCLC IN THE ENRGY STUDY

Efficacy Parameter	BIZENGRI Previously Treated with Systemic Therapy (n = 64)
Overall response rate[1] (95% CI)	33% (22%, 46%)
Complete response rate	1.6%
Partial response rate	31%
Duration of response	
Median (95% CI) (months)	7.4 (4.0, 16.6)
Patients with DOR ≥6 months2	43%

1 Confirmed overall response rate assessed by BICR

TABLE 4 EFFICACY RESULTS BY NRG1 GENE FUSION PARTNER IN NRG1 FUSION-POSITIVE NSCLC PATIENTS IN THE ENRGY STUDY

NRG1 Partner[1]	BIZENGRI (n = 64)	ORR		DOR
		n (%)	95% CI	Range (Months)
CD74	37	12 (32)	(18, 50)	1.8+; 20.3+
SLC3A2	14	5 (36)	(13, 65)	3.6; 20.8+
SDC4	7	2 (29)	(3.7, 71)	7.4; 16.6
CDH1	2	1 (50)	(1.3, 99)	1.9+
FUT10	1	PD	NA	NA
PVALB	1	PD	NA	NA
ST14	1	PD	NA	NA
VAMP2	1	PR	NA	5.6

1 Fusion partners identified in this primary analysis set (n=64) may not represent all potential fusion partners. PR=partial response; PD=progressive disease; NA=not applicable; "+" indicates ongoing response

Advanced Unresectable or Metastatic NRG1 Fusion-Positive Pancreatic Adenocarcinoma

The efficacy of BIZENGRI was evaluated in the eNRGy study (NCT02912949), a multicenter, open-label, multi-

continues on page 35

LitScan for Case Managers

LitScan for Case Managers reviews medical literature and reports abstracts that are of particular interest to case managers in an easy-to-read format. Each abstract includes information to locate the full-text article if there is an interest. This member benefit is designed to assist case managers in keeping current with clinical breakthroughs in a time-effective manner.

Clin Infect Dis. 2024 Nov 26:ciae559. doi: 10.1093/cid/ciae559. Online ahead of print.

Optimal Annual COVID-19 Vaccine Boosting Dates Following Previous Booster Vaccination or Breakthrough Infection

Townsend JP, Hassler HB, Dornburg A

BACKGROUND: COVID-19 booster vaccinations mitigate transmission and reduce the morbidity and mortality associated with infection. However, the optimal date for booster administration remains uncertain. Geographic variation in infection rates throughout the year makes it challenging to intuit the best yearly booster administration date to effectively prevent infection, and also challenging to provide best guidance on how to alter booster administration in response to a breakthrough infection.

METHODS: We leveraged longitudinal antibody and reinfection probabilities with spatiotemporal projections of COVID-19 incidence to develop a geographically informed approach to optimizing the timing of booster vaccination. We assessed the delay in booster vaccination that is warranted following breakthrough infections whenever they occur during the year, enabling a personalized assessment of optimal timing that acknowledges and respects diversity of COVID-19 immune status, addressing a substantial barrier to uptake.

RESULTS: Yearly booster vaccination on any date is beneficial to prevention of infection. However, each location exhibits as much as a 3-4-fold range in degree of protection by date of uptake. Optimal COVID-19 booster vaccination dates are location-specific, typically in early autumn in the Northern Hemisphere. Infection late in the interval between boosts substantially alters the optimal boosting date.

CONCLUSIONS: Considerable benefit accrues from aptly timing COVID-19 booster vaccination campaigns, which can be tailored to specific locations. Individuals can acquire the greatest benefit from booster vaccination by timing it optimally, including delaying in cases of infection late in the interval between boosts. These results provide location-specific guidance for public health policy, healthcare provider recommendations, and individual decision-making.

Am Heart J. 2024 Dec 3:S0002-8703(24)00316-8. doi: 10.1016/j.ahj.2024.11.015. Online ahead of print.

Primary Medication Adherence in Medicare Beneficiaries Prescribed Sacubitril-Valsartan or Renin-Angiotensin System Blockers for Heart Failure with Reduced Ejection Fraction

Hwang CS, Desai RJ, Kesselheim AS, Levin R, Rome BN

BACKGROUND: Sacubitril-valsartan is an angiotensin receptor-neprilysin inhibitor (ARNI) that is now preferred over angiotensin-converting enzyme inhibitors (ACE-Is) and angiotensin-II-receptor blockers (ARBs) for treating heart failure with reduced ejection fraction (HFrEF). Primary medication adherence to a costly brand-name ARNI, compared to inexpensive generic ACE-Is or ARBs, is unknown.

METHODS: This cohort study used a linked database of electronic health records and Medicare fee-for-service claims from a large integrated health care system in Boston to compare primary medication adherence among Medicare beneficiaries with HFrEF newly prescribed sacubitril-valsartan, those newly prescribed a generic ACE-I or ARB, and those switching from an ACE-I or ARB to sacubitril-valsartan. The primary outcome was the proportion of individuals who filled their first prescription for any ARNI, ACE-I, or ARB within 90 days; a secondary outcome was the mean number of days to first fill. We used logistic regression to adjust for variations in patient characteristics, including demographics, comorbidities, medication use, and qualification for subsidized out-of-pocket costs.

RESULTS: Among 50 new sacubitril-valsartan prescription recipients, 33 (66%) demonstrated primary adherence at 90 days, compared to 141 of 231 (61%) new ACE-I or ARB prescription recipients (adjusted odds ratio 1.32, 95% CI 0.63 to 2.73, p=0.51). The mean time to first fill was 18 days for those prescribed sacubitril-valsartan and 9 days for those prescribed generic ACE-Is or ARBs (p<0.001). By contrast, primary adherence at 90 days was higher (329 of 364, 90%) among those who switched from a generic ACE-I or ARB to newly prescribed sacubitril-valsartan.

CONCLUSIONS: In this small, single-center cohort study of Medicare beneficiaries with HFrEF, there was no difference in

primary medication adherence among individuals newly prescribed sacubitril-valsartan and those newly prescribed generic ACE-Is or ARBs, although it took sacubitril-valsartan prescription recipients longer to fill their medication. Adherence was high among patients switching from an ACE-I or ARB to sacubitril-valsartan, suggesting that this switch was not associated with interruptions in renin-angiotensin blockade.

Circ Cardiovasc Qual Outcomes. 2024 Dec 3:e011273. doi: 10.1161/CIRCOUTCOMES.124.011273. Online ahead of print.

Integrating Out-of-Pocket Costs Into Shared Decision-Making for Heart Failure With Reduced Ejection Fraction: A Stepped-Wedge Trial (POCKET-COST-HF)

Dickert NW, Speight CD, Balser M, et al.

BACKGROUND: Guideline-directed medical therapy for heart failure (HF) with reduced ejection fraction can entail high out-of-pocket (OOP) costs, prompting concerns about financial toxicity and access. OOP costs are generally unavailable during encounters. This trial assessed the impact of providing patient-specific OOP costs to patients and clinicians.

METHODS: This trial was conducted between June 2021 and August 2023 at 6 clinics in 2 health systems using a stepped-wedge, clinic-level cluster-randomized design. Adult patients with HF with reduced ejection fraction (left ventricular ejection fraction ≤40%) were enrolled. The intervention was built upon the EPIC-HF (Electronically Delivered, Patient-Activation Tool for Intensification of Medications for Chronic Heart Failure with Reduced Ejection Fraction) checklist of approved HF with reduced ejection fraction medications. Patients and clinicians received this checklist with (intervention) or without (control) patient-specific OOP cost estimates for higher-cost medications at the time of encounter. Estimates were obtained by providing pharmacy benefit information to a financial navigation firm. Encounters were audio-recorded, and patients were surveyed 2 weeks later. The primary outcome was cost-informed decision-making, defined by mentioning HF medication cost during the encounter. The primary analysis used a generalized linear mixed model. Secondary outcomes were assessed via transcript subcoding and analysis of survey responses.

RESULTS: Demographic characteristics of 247 patients (mean age, 62.9 years; 29.5% female; 26.3% Black; and 3.2% Hispanic/LatinX) treated by 39 clinicians in intervention and control periods were similar. In the primary model, the rate of cost-informed decision-making was higher in the intervention group than the control group (68% versus 49%; P=0.021). Baseline rates of cost discussions and the impact of the intervention varied across sites. When cost discussions were present, fewer discussions in the intervention group involved contingency plans to address potential costs (16.5% versus 31.9%; P=0.028). Most other secondary outcomes were not significantly different.

CONCLUSIONS: Disclosing comprehensive OOP medication costs to patients with HF with reduced ejection fraction increased cost-informed decision-making. Further work is needed to optimize implementation and assess the impact on medication choices and adherence.

J Acquir Immune Defic Syndr. 2024;97(1):63-67. doi:10.1097/qai.0000000000003458.

Veterans Aging Cohort Study Index 2.0 Shows Improved Discrimination of Neurocognitive Impairment and Frailty in People with HIV

Yan CY, Cooley SA, Ances BM

OBJECTIVE: This study examined whether the revised VACS2.0 index (including serum albumin, body mass index (BMI), and white blood cell (WBC) count) had stronger correlations with cognitive function, brain volume, and frailty in PWH ≥ 50 years compared to the VACS1.0.

DESIGN AND METHODS: Neuropsychological performance (NP) Z-scores (learning, retention, executive functioning (EF), psychomotor function/processing speed (PM/PS), language, and global cognition), and neuroimaging measures (brain volumetrics) were analyzed in PWH (n = 162). A subset of the sample (n = 159) was defined as either frail (n = 18) or non-frail (n = 141) according to the Fried phenotype criteria. Brain volumes, NP scores, and frailty subgroups were analyzed with both VACS scores, albumin, BMI, and WBC count using Pearson's significance tests and independent T-tests.

RESULTS: Higher VACS scores significantly correlated with lower brain volumes. Higher VACS2.0 scores were associated with lower NP in the EF and PM/PS domains and were primarily driven by albumin. VACS1.0 scores did not correlate with cognition Z-scores. There was no relationship between frailty status and VACS1.0. PWH who were frail had significantly greater VACS2.0 scores than non-frail PWH.

CONCLUSIONS: The addition of albumin to the VACS index improved its correlations with NP and frailty in PWH. While low albumin levels may contribute to cognitive decline or frailty, the reverse causality should also be considered. These findings suggest that the VACS2.0 index (especially albumin) is a valuable measure for clinicians to improve outcomes in PWH.

J Acquir Immune Defic Syndr. 2024 Dec 4. doi: 10.1097/QAI.0000000000003578. Online ahead of print.

A Review of Network Models for HIV Spread

Mattie H, Goyal R, De Gruttola V, Onnela JP

BACKGROUND: HIV/AIDS has been a global health crisis for over four decades. Network models, which simulate human behavior and intervention impacts, have become an essential tool in guiding HIV prevention strategies and policies. However, no comprehensive survey of network models in HIV research has been conducted. This paper fills that gap, offering a summary of past work and future directions to engage more researchers and inform policy related to eliminating HIV.

SETTING: Network models explicitly represent interactions between individuals, making them well-suited to study HIV transmission dynamics. Two primary modeling paradigms exist: a mechanistic approach from applied mathematics and a statistical approach from the social sciences. Each has distinct strengths and weaknesses, which should be understood for effective application to HIV research.

METHODS: We conducted a systematic review of network models used in HIV research, detailing the model types, populations, interventions, behaviors, datasets, and software employed, while identifying potential future research directions.

RESULTS: Network models are particularly valuable for studying behaviors central to HIV transmission, such as partner selection and treatment adherence. Unlike traditional models, they focus on indi- vidual behaviors, aligning them with clinical practice. However, more accurate network data are needed for better model calibration and actionable insights.

CONCLUSION: This paper serves as a point of reference for HIV researchers interested in applying network models and understanding their limitations. To our knowledge, this is the most comprehensive review of HIV network models to date.

Int J Cardiol. 2024 Nov 30:421:132865. doi: 10.1016/j.ijcard.2024.132865. Online ahead of print.

Impact of Stress Coping Style on Self-Care Behaviors and Prognosis in Patients with Heart Failure: A Prospective Longitudinal Observational Study

Shimode Y, Kitai T, Iwata K, et al.

BACKGROUND: Heart failure (HF) requires effective management and self-care education to improve outcomes. However, daily self-care routines necessary for managing HF can lead to psychological issues, including stress, potentially exacerbating the condition. Patient stress-coping behaviors may significantly impact prognosis.

OBJECTIVE: We aimed to identify stress coping styles in patients with HF and examine their impact on self-care behavior and prognosis. s.

METHODS: This study utilized a longitudinal prospective observational design. Patients were categorized into task-oriented (task), emotion-oriented (emotion), and avoidance (avoidance) coping groups using the Coping Inventory for Stress Situations. Stress levels and self-care behaviors were evaluated during hospitalization and 1 and 3 months after discharge. The primary outcome was a composite of HF readmission and all-cause mortality during the 180-day post-discharge period. Longitudinal changes in self-care behaviors were assessed according to stress intensity.

RESULTS: We included 151 patients (age, 74 [60-80] years; female, 37.1 %) hospitalized for HF exacerbation between August 2021 and August 2023. The task group comprised 45 patients (29.8 %); emotion group, 47 (31.1 %); and avoidance group, 59 (39.1 %). The avoidance group had a higher risk of adverse events during follow-up (task, emotion, and avoidance: 8.9 % vs. 14.9 % vs. 32.2 %, p = 0.004). The avoidance-coping style was the only independent predictor of the primary outcome (hazard ratio: 3.84, 95 % confidence interval: 1.40-10.53, p = 0.009). Self-care behaviors were notably poorer in the avoidance group, particularly under conditions of high stress.

CONCLUSIONS: Stress-coping strategies impact both prognosis and self-care outcomes in patients with HF, and education programs should consider incorporating these strategies.

ASAIO J. 2024 Dec 5. doi: 10.1097/MAT.0000000000002352. Online ahead of print.

Bridge to Heart Transplant With Temporary Mechanical Circulatory Support: Trends and Outcomes in the 2018 Allocation Policy Era

Dorken-Gallastegi A, Hong Y, Hess NR, et al.

The United Network for Organ Sharing (UNOS) 2018 heart allocation policy prioritizes patients receiving temporary mechanical circulatory support (tMCS) given the high waitlist mortality rate of this group. This study evaluates national trends and waitlist outcomes for patients receiving tMCS under the UNOS 2018 allocation policy. Adult patients waitlisted for isolated heart transplantation were included using the UNOS database. The prevalence of tMCS, 90 day waitlist mortality, 90 day incidence of transplantation, and posttransplant 1 year mortality were analyzed. A total of 27,343 patients were waitlisted during the study period (pre-policy change: 13,004 vs. post-policy change: 14,339). The

prevalence of tMCS increased from 7.4% (n: 956) to 22.4% (n: 3,186) after the policy change ($p < 0.001$). The use of Impella increased proportionally among tMCS modalities. Patients on tMCS had lower adjusted odds of waitlist mortality ($p < 0.001$), higher adjusted incidence of transplantation ($p < 0.001$), and similar posttransplant mortality ($p = 0.10$) under the 2018 policy. Patients on extracorporeal membrane oxygenation (ECMO) support had the highest odds of 90 day waitlist mortality ($p < 0.05$) but also the highest incidence of transplantation in the post-policy change cohort ($p < 0.05$). In conclusion, the use of tMCS as bridge to heart transplantation increased threefolds and is associated with lower waitlist mortality and higher incidence of transplantation following the UNOS 2018 allocation policy change.

Clin Lung Cancer. 2024 Nov 16:S1525-7304(24)00252-3. doi: 10.1016/j.cllc.2024.11.006. Online ahead of print.

Metrics for Perioperative Exercise in Patients Undergoing Lung Cancer Resection: A Systematic Review

Stumm TW, Mina S, Okusanya O, et al.

Perioperative exercise interventions have been shown to mitigate morbidity associated with lung resection. While these interventions have established a role in this patient population, there has been little discussion regarding which metrics are used to standardize perioperative exercise interventions. A better understanding of these metrics is needed to define best practices and ensure interventions are reproducible. A systematic review of the literature was performed using CINAHL, PubMed/MEDLINE, and SCOPUS. The initial review yielded a total of 3456 results. After review of titles and abstracts, 119 studies remained. The included studies underwent detailed review of the manuscript and 29 were found to meet the inclusion criteria for the review. A total of 29 studies were selected for inclusion. Included studies were completed on adult patients with diagnosis of lung cancer who underwent lung resection surgery and participated in a standardized exercise intervention before or after their surgery. The most common metrics used to grade exercise interventions were percent maximal workload (%Wmax) based on preoperative cardiopulmonary exercise testing (CPET), which was used in 41% of included studies, and symptom limited Borg rating of perceived exertion, which was used in 38% of included studies. There was significant variation in metrics used for tracking perioperative exercise interventions. Standardization of validated metrics for perioperative exercise interventions, specifically using percent of maximal workload and the Borg scale, would impact the ability to compare future studies and the effectiveness of exercise interventions.

PLoS One. 2024 Dec 2;19(12):e0314527. doi: 10.1371/journal.pone.0314527. eCollection 2024.

Platelet Count and Hypertension as Indicators of Height Loss in the General Population: A Prospective Study

Yuji Shimizu Y, Yamanashi H, Noguchi Y, et al.

Circulating CD34-positive cell count is inversely associated with height loss. It acts as an indicator of endothelial repair activity. In conjunction with CD34-positive cells, platelets contribute to endothelial repair. The presence of hypertension increases the demand for endothelial repair. Therefore, platelet count could be associated with height loss among individuals with hypertension. A retrospective study of 2,343 individuals aged 40 to 79 years was conducted. Height loss was defined as being in the highest quartile of annual height decrease (1.6 mm/year for men and 2.0 mm/year for women). A significant inverse association between platelet count and height loss was observed only among participants with hypertension. After adjusting for known cardiovascular risk factors, the odds ratio (95% confidence interval) for height loss per 1 standard deviation increment in platelet count (5.09×104/μL for men and 5.03×104/μL for women) was 0.83 (0.70, 0.98) for participants with hypertension and 1.02 (0.90, 1.16) for participants without hypertension. Independent of known cardiovascular risk factors, platelets could prevent accelerated height loss among individuals with hypertension. Unlike CD34-positive cell count, platelet count and blood pressure, which are easy to assess in daily clinical practice, influence height loss.

BMJ. 2024 Dec 4:387:e078386. doi: 10.1136/bmj-2023-078386.

Chocolate Intake and Risk of Type 2 Diabetes: Prospective Cohort Studies

Liu B, Zong G, Zhu L, et al.

OBJECTIVE: To prospectively investigate the associations between dark, milk, and total chocolate consumption and risk of type 2 diabetes (T2D) in three US cohorts.

DESIGN: Prospective cohort studies.

SETTING: Nurses' Health Study (NHS; 1986-2018), Nurses' Health Study II (NHSII; 1991-2021), and Health Professionals Follow-Up Study (HPFS; 1986-2020).

PARTICIPANTS: At study baseline for total chocolate analyses (1986 for NHS and HPFS; 1991 for NHSII), 192 208 participants without T2D, cardiovascular disease, or cancer were included. 111 654 participants were included in the analysis for risk of T2D by intake of chocolate subtypes, assessed from 2006 in NHS and HPFS and from 2007 in NHSII.

Main outcome measure: Self-reported incident T2D, with patients identified by follow-up questionnaires and confirmed through a validated supplementary questionnaire. Cox proportional hazards regression was used to estimate hazard ratios and 95% confidence intervals (CIs) for T2D according to chocolate consumption.

RESULTS: In the primary analyses for total chocolate, 18 862 people with incident T2D were identified during 4 829 175 person years of follow-up. After adjusting for personal, lifestyle, and dietary risk factors, participants consuming ≥5 servings/week of any chocolate showed a significant 10% (95% CI 2% to 17%; P trend=0.07) lower rate of T2D compared with those who never or rarely consumed chocolate. In analyses by chocolate subtypes, 4771 people with incident T2D were identified. Participants who consumed ≥5 servings/week of dark chocolate showed a significant 21% (5% to 34%; P trend=0.006) lower risk of T2D. No significant associations were found for milk chocolate intake. Spline regression showed a linear dose-response association between dark chocolate intake and risk of T2D (P for linearity=0.003), with a significant risk reduction of 3% (1% to 5%) observed for each serving/week of dark chocolate consumption. Intake of milk, but not dark, chocolate was positively associated with weight gain.

CONCLUSIONS: Increased consumption of dark, but not milk, chocolate was associated with lower risk of T2D. Increased consumption of milk, but not dark, chocolate was associated with long term weight gain. Further randomized controlled trials are needed to replicate these findings and further explore the mechanisms.

Diabetes Care. 2024 Dec 2:dc241562. doi: 10.2337/dc24-1562. Online ahead of print.

Continuous Glucose Monitor Accuracy for Diabetes Management in Hospitalized Children

Garg N , Lewis K, White PC, Adhikari S

OBJECTIVE: The adoption of continuous glucose monitors (CGMs) in inpatient settings in the pediatric population has been slow because of a scarcity of data on their reliability in hospitalized children.

RESEARCH DESIGN AND METHODS: We retrospectively reviewed the accuracy of the Dexcom G6 CGM system in pediatric patients with diabetes admitted to our academic children's hospital from March 2018 to September 2023. We cross-referenced the Dexcom Clarity database against an internal database of inpatient admissions to identify all children with CGM data admitted to the hospital. We recorded sensor glucose readings from Clarity and values for point-of-care (POC) glucose, blood urea nitrogen (BUN), and pH from the electronic medical record. CGM accuracy and clinical reliability were measured by mean absolute relative difference (MARD) and Clarke error grid (CEG) analyses.

RESULTS: There were 3,200 admissions of children with diabetes in this period, of which 277 (from 202 patients age 2-18 years) had associated CGM data. Paired CGM and POC measurements (n = 2,904) were compared, resulting in an MARD of 15.9%, with 96.6% of the values in zones A and B of the CEG analysis. Approximately 62% of paired values fell within a 15% or 15 mg/dL difference, whichever was larger (15%/15 mg/dL range), 74% within 20%/20, and 88% within 30%/30. Serum pH, sodium, and BUN had no impact on CGM values or absolute relative difference in linear regression analysis.

CONCLUSIONS: CGMs demonstrated acceptable accuracy in hospitalized children with diabetes. CGM data should be integrated into hospital electronic records to optimize management.

Mult Scler. 2024 Dec 1:13524585241301854. doi: 10.1177/13524585241301854. Online ahead of print.

A Digital Version of the Nine-Hole Peg Test: Speed May Be a More Reliable Measure of Upper-Limb Disability Than Completion Time in Patients With Multiple Sclerosis

Jiang X, M, Johnston J, et al.

BACKGROUND: A digital adaptation of the nine-hole peg test (9HPT) was developed with the potential to provide novel disability features for patients with multiple sclerosis (PwMS).

OBJECTIVES: The objectives were to evaluate the 9HPT features based on reliability, prognosis, and discrimination between treatment groups.

METHODS: The MS partners Advancing Technology and Health Solutions (MS PATHS) cohort data were used to derive new features including completion time and speed. Association and reliability between features and clinical outcomes were tested by intraclass correlation coefficients (ICCs) with repeated measures. The added prognostic value of the features for a clinically meaningful decline was assessed by time-to-event analyses with likelihood ratio tests. The estimated effect size between treatment efficacy groups was acquired from linear mixed-effects models. Sample size was calculated for a hypothetical randomized clinical trial.

RESULTS: For the 10,843 PwMS, speed and completion time were associated with MS disability. Compared with time, speed showed higher reliability (ICC = 0.78 vs 0.74), added benefits in predicting disability worsening ($p < 0.001$), better discrimination between high- and low-efficacy groups (effect size: 0.035 vs 0.015), and an 18% reduction in required sample size for a 1-year clinical trial.

CONCLUSION: Integrating horizontal hand distances traveled over the 9HPT pegboard can be a more reliable measure of hand function.

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cohort clinical study. The study enrolled 30 adult patients with advanced or metastatic NRG1 fusion-positive pancreatic adenocarcinoma who had disease progression following standard of care treatment. Identification of an NRG1 gene fusion was prospectively determined in local laboratories using next generation sequencing (NGS). Patients received BIZENGRI as an intravenous infusion, 750 mg every 2 weeks, until unacceptable toxicity or disease progression. Tumor assessments were performed every 8 weeks. The major efficacy outcome measures were confirmed overall response rate (ORR) and duration of response (DOR) as determined by a blinded independent central review (BICR) according to Response Evaluation Criteria in Solid Tumors (RECIST) v1.1.

The trial population characteristics were: median age 49 years (range: 21 to 72) with 10% of patients ≥ 65 years of age; 43% female; 87% White, 7% Asian, 3.3% Black or African American, and 3.3% other races or not reported; 3.3% were Hispanic or Latino; baseline ECOG performance status of 0 (53%) or 1 (47%) and all patients had metastatic disease. Patients received a median of 2 prior systemic therapies (range 0 to 5); 97% had prior systemic therapy with FOLFIRINOX, gemcitabine/taxane-based therapy, or both. A total of 27 patients (90%) had an NRG1 gene fusion detected by RNA-based NGS that may include DNA sequencing and 3 (10%) had an NRG1 gene fusion detected by DNA-based NGS.

Efficacy results are summarized in Table 5.

TABLE 5 EFFICACY RESULTS FOR ADVANCED UNRESECTABLE OR METASTATIC NRG1 FUSION-POSITIVE PANCREATIC ADENOCARCINOMA IN THE ENRGY STUDY

Efficacy Parameter	BIZENGRI (n = 30)
Overall response rate1 (95% CI)	40% (23%, 59%)
Complete response rate	3.3%
Partial response rate	37%
Duration of response	
Range (months)	3.7, 16.6
Patients with DOR ≥6 months2	67%

1 Confirmed overall response rate assessed by BICR
2 Based on observed duration of response

TABLE 6 EFFICACY RESULTS BY NRG1 GENE FUSION PARTNER IN NRG1 FUSION-POSITIVE PANCREATIC ADENOCARCINOMA PATIENTS IN THE ENRGY STUDY

NRG1 Partner[1]	BIZENGRI (n = 30)	ORR		DOR
		n (%)	95% CI	Range (Months)
ATP1B1	14	7 (50)	(23, 77)	3.7, 16.6
CD44	3	0	(0, 71)	NA
NOTCH2	3	1 (33)	(0.8, 91)	7.4+
SLC4A4	3	2 (67)	(9, 99)	7.5+, 15.2+
AGRN	1	PR	NA	9.1+
APP	1	PR	NA	3.7
CDH1	2	SD, SD	NA	NA
SDC4	1	SD	NA	NA
THBS1	1	PD	NA	NA
VTCN1	1	SD	NA	NA

1 Fusion partners identified in this primary analysis set (n=30) may not represent all potential fusion partners. PR=partial response; PD=progressive disease; SD=stable disease; NA=not applicable; "+" indicates ongoing response

HOW SUPPLIED/STORAGE AND HANDLING

How Supplied

BIZENGRI (zenocutuzumab-zbco) injection is a sterile, clear to slightly opalescent, colorless to slightly yellow, preservative- free solution for intravenous infusion. Each single-dose vial contains 375 mg/18.75 mL (20 mg/mL) BIZENGRI. Two vials (equivalent to 1 dose) are packed in a single carton. (NDC 83077-100-01 for individual vial and NDC 83077-100-02 for a single carton).

Storage and Handling

Store in a refrigerator at 2°C to 8°C (36°F to 46°F) in original carton to protect from light. Do not freeze. Do not shake.

BIZENGRI is manufactured and distributed by Merus US, Inc. Cambridge, MA.

Families and Case Managers…a Winning Partnership

continued from page 3

to support the patient.

- **Ensuring Their Care:** Family involvement can enhance the patient's autonomy, dignity, and empowerment as well as improve their satisfaction, engagement, and adherence to the care plan. It can also strengthen their social and emotional support network. The case manager benefits as well because it can increase the understanding of the patient's/clent's needs, preferences, and goals.
- **Identifying Potential Problems:** Communication between a case manager and a patient's/client's family members can help to identify potential problems or issues before they become major concerns. Proactive involvement can also help to prevent hospitalizations and other adverse and costly events that are also stressful for the patient/client and family.
- **Challenges and Barriers to Family Involvement:** While we would hope that communication with family and patients would be a comfortable process, there is always the possibility of challenges and barriers that might interfere with the implementation of a care plan. Families might lack the knowledge, skills, or confidence and be intimidated by healthcare professionals who often use medical terminology in their conversations with patients/clients and family members.

While there needs to be a patient/client-centered model of care across all practice settings, it needs to be a patient/client and family-centered one to optimize the opportunities for improved outcomes and enhanced satisfaction with the intervention that case managers provide. As I conclude, I would ask that you recall the time that you or a family member was involved in a hospital admission, an ER visit, or one of several physician visits. How did you feel, were you respected, cared for, or perhaps treated as an imposition? Sadly, in today's healthcare environment these occurrences are all too often not representative of the patient/client/family-centered model of care that we hope to achieve.

We can and must do better! We can make a difference … one patient/client and one family at a time!

Warm regards, Catherine

Catherine M. Mullahy

Catherine M. Mullahy, RN, BS, CRRN, CCM, FCM, *Executive Editor*
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Music Therapy and Health, Part 2: Music Therapist as Part of the Interdisciplinary Team

continued from page 18

Twyford, K., & Watson, T. (2008). *Integrated Team Working: Music Therapy as Part of Transdisciplinary and Collaborative Approaches*. Jessica Kingsley Publishers.

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2024: CMSA's Year of Impact Through Education, Collaboration, and Advocacy in Motion

continued from page 7

partners, including the Association of Blood & Biotherapies (AABB) and National Transitions of Care Coalition (NTOCC) joined CMSA in advancing shared goals.

Corporate partnerships were another highlight, with organizations like Aidin, Angel MedFlight, and MCG Health demonstrating their support for case management throughout the year. CMSA's annual collaboration with CMI for the Case Management Salary & Trends Survey and the Product Theater at the Annual Conference provided valuable insights and resources for members.

For me, partnerships are where innovation thrives. Collaborating with like-minded organizations allows us to bring new tools, resources, and ideas into the case management profession. It also serves as a powerful reminder that our role intersects with so many aspects of healthcare—a testament to the reach and importance of what we do.

Looking Ahead

CMSA's achievements in 2024 reflect its unwavering commitment to advancing case management, empowering professionals, and improving healthcare delivery. Through education, advocacy, collaboration, and member engagement, CMSA has positioned itself as a leader and champion of case management excellence.

As we look toward 2025, CMSA remains dedicated to:

- Expanding educational offerings and CE opportunities to enhance your practice
- Strengthening advocacy efforts to influence healthcare policy
- Enhancing member value through innovative programs and partnerships
- Promoting DEIB and health equity as integral components of case management practice

The work accomplished in 2024 continues to build upon our strong foundation for future success, ensuring that case managers continue to play a vital role in improving patient outcomes and navigating the complexities of modern healthcare.

Thank you to CMSA members, volunteers, and partners who made this year a resounding success. Together, we are advancing the profession and powering the future of healthcare. CM

Legal Updates

continued from page 8

surveyors are now required to focus on whether noncompliance caused, or is likely to cause, serious harm. This change is based on CMS' emphasis on the role of noncompliance as opposed to assignment of individual blame.

Surveyors must decide whether deficiencies have "caused or made likely serious mental or psychosocial harm." If it is difficult to determine whether patients have suffered serious psychosocial harm, surveyors must use the standard of the "reasonable person." This standard considers how reasonable patients in the same position would be affected by noncompliance.

There are no automatic citations for immediate jeopardy. Rather, each individual citation should be decided independently.

It is also important to note that CMS has developed a template to assist surveyors in documenting information necessary to establish each of the key components of immediate jeopardy. Surveyors must use the template to document evidence of each requirement to show immediate jeopardy. The completed template must be used to convey information to providers.

Findings of immediate jeopardy are very serious and put participation in Medicare and Medicaid Programs at risk.

You can review the entire Memo here: https://www.cms.gov/files/document/qso-25-09-all.pdf.

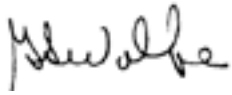
Because findings of immediate jeopardy during surveys are so serious—threatening the ability of providers to continue to do business—clarification of requirements and careful documentation of every requirement are certainly welcome. CM

Healthcare Trends to Prepare for in 2025 *continued from page 2*

critical problem will accelerate and exasperate all at the same time. With new technological developments, workers will be needed to operate, maintain, and service the equipment. More training will be needed. Some of that training will need to start in the health profession schools and not on the job, because the technology will become standard and basic.

- **Omnichannel patient engagement.** This technique will become standard. Omnichannel engagement with patients will show many benefits including improved treatment adherence and enhanced patient satisfaction. Omnichannel will replace multichannel services in patient engagement. Patients will not receive separate phone calls and emails, but omnichannel apps will operate independently, allowing smooth transitions between touchpoints such as a mobile app, a confirmation email, and a SMS reminder integrated into a single system. Use of omnichannel will improve patient experiences and operational efficiency, which, in turn, will allow providers to focus on patient-centric/value-driven care.
- **Labor shortages**. Beyond the crisis in the number of technologically skilled workers, labor shortages will impact all categories of healthcare workers. Particularly hard hit will be physicians, registered nurses, and case managers. Some 35% of current physicians are planning to leave their roles within the next five years. Registered nurses are aging out or choosing other fields to enter. This impacts case managers since a majority of case managers are registered nurses. These shortages will create a demand for various extender positions in these categories as well as ongoing support through various channels, virtual platforms, emails, and remote learning tools. As labor shortages continue to grow, clinical education on new technologies and protocols will become even more critical. What tools will be developed to improve patient care despite a shrinking labor force?
- **Digital platforms.** These technologies have reshaped healthcare delivery, allowing access to care from anywhere. Remote patient monitoring and telemedicine services will make it easier for the management of chronic conditions without frequent hospital visits. Digital solutions will also expand access to care for those in remote or underserved areas. AI will play a role in these digital-first models.
- **Cybersecurity.** A major concern in healthcare is cybersecurity. Healthcare providers must protect the personal health information of patients, especially given that healthcare is a prime target for cyberattacks. Stricter regulations such as HIPAA require healthcare organizations to keep health data safe. With the rise of telemedicine and wearable-technology, there are more opportunities for breaches, so many healthcare providers are turning to other storage models. Cybersecurity tools will be driven by AI.
- **Value-based care models**. Patient-centered experiences are transforming delivery of care. Value-based care models prioritize personalized care, ensuring that treatment is both efficient and effective. Some AI-enabled remote patient monitoring will drive new models to make care more coordinated and cost-effective. The focus will be on outcomes that are most important to the patient.
- **Rising medical costs.** As we all know, rising costs of medical care are putting economic pressures on healthcare organizations. Inflation, increased prescription drug spending, and the rising use of behavioral health services are contributing to the growing financial strain. Medical cost growth will rise to its highest level in 13 years. Innovative and collaborative cost management strategies must be explored because the incremental approach is not viable.

Case managers are involved in every single one of these areas. Success in 2025 will hinge on your ability to adapt, innovate, and meet patients where they are. Emerging trends must be embraced while responding to labor force dynamics. We must view these challenges as opportunities. Now is the time to act! Be prepared! Do something that makes a difference! Lead!



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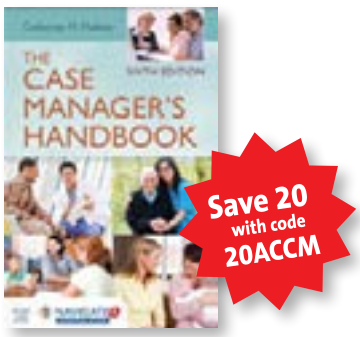

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Editor-in-Chief/Executive Vice President:
Gary S. Wolfe, RN, CCM, FCM
541-505-6380
email: gwolfe@academyccm.org

Executive Editor: Catherine M. Mullahy, RN, BS, CRRN, CCM, FCM, 631-673-0406
email: cmullahy@academyccm.org

Publisher/President: Howard Mason, RPH, MS, 203-454-1333, ext. 1;
e-mail: hmason@academyccm.org

Art Director: Laura D. Campbell
e-mail: lcampbell@academyccm.org

Copy Editor: Jennifer Maybin
e-mail: jmaybin@academyccm.org

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Executive Vice President:
Gary S. Wolfe, RN, CCM, FCM
541-505-6380
email: gwolfe@academyccm.org

Member Services:
203-454-1333, ext. 3
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